BUREAU OF HYGIENE AND TROPICAL DISEASES.

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HELMINTHIASIS.

McKENZIE (A.). **Observations on Filariasis, Yaws and Intestinal Helminthic Infections in the Cook Islands with Notes on the Breeding Habits of** *Stegomyia pseudoscutellaris.—Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 138–149. With 4 text figs.

The author examined for filarial infection 197 patients of all ages and either sex at Rarotonga and 71 at Aitutaki. Treatment was usually sought on account of abscess, fever with lymphangitis, elephantiasis, and occasionally hydrocele. Amongst the Rarotonga patients filarial embryos were found in 79, or 40 per cent. Only 7 examined were under 10 years of age, and in none of them was the embryo discovered. Nor were they found in any of four cases of elephantiasis. In Aitutaki they were present in half the patients. In one case of elephantiasis and one of hydrocele embryos were present in the blood and in the fluid of the latter.

Infection experiments were carried out with *Culex fatigans, Stegomyia fasciata* and *S. pseudoscutellaris.* In the first no living embryos were found in the thoracic muscles after the third day ; in the second they were found on the fifth, but the majority appeared to be dead ; after 10 days development had made but little progress and none were found alive after the 11th day. With *S. pseudoscutellaris*, however, complete developments of the embryos and migration to the proboscis were seen to occur in 13 days.

As regards other helminthic infections the number of cases examined was small, 121 in all. 16 of these were negative ; Necator was found in 76, or 62·8 per cent., Trichuris in 41, or 33·88 per cent., while Ascaris was comparatively rare. Three children suffering with Ascaris infection died with bronchitis symptoms associated with tuberculosis, and it is suggested that the passage of the larvae through the lungs had prepared the soil for the bacillus. [In the Tables inserted the percentages have been in several instances wrongly computed] .

H. Harold Scott.

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Zschucke (H.). Ärztliche Erfahrungen auf Kaffeeplantagen in Zentralamerika. [**Medical Experiences on Coffee Plantations in Central America.**]—*Beihefte z. Arch. f. Schiffs- u. Trop-Hyg.* 1925. Vol. 29. No. 2. 56 pp. [Wurmkrankheiten: pp. 18–42 (514–538).]

During his residence in Central America (chiefly Guatemala) the author examined large numbers of individuals for the prevalence of the common intestinal worms. Hookworm varied between 36 per cent. in San Andres Osuna and 97 per cent. in Concepcion; Ascaris between 50 per cent. in Rosario and 89 per cent. in Porvenir; Trichuris was also highest (82 per cent.) in the last-named. The influence of height above sea-level was not noticed, contrary to what Lurz had found in East Africa. 48 heavily infected individuals in San Francisco Miramar harboured an average of 420 worms each. One of the tables given (No. 6) shows well the result of treatment in reducing the degree of infection, though having little or no effect on the incidence. Thus, before treatment there were 81 per cent. light infections, 12 moderate, and 7 severe; 42 per cent. of those examined were infected and the average number of worms was 118. Five months after treatment there was 45 per cent. infection; of these 87 per cent. were lightly infected, 12 moderately and 1 severe, and the average number harboured was 12.

The soil of the coffee-plantations was found to be teeming with nematode larvae, as many as 40 per cent., of which probably between 5 and 6 per cent. were hookworm. The usual recommendations are given as regards latrine accommodation, and the wearing of boots; wooden-soled sandals were tried but were not effective.

Blood examinations were also made and very variable were the results, the haemoglobin ranging from below 30 to over 70 per cent., but the author emphasizes the fact that in his opinion this test is the best measure of the clinical effect of ankylostomiasis.

As regards dealing with the disease, apart from prophylactic measures, in each district 100–200 preliminary examinations were made, and if more than 75 per cent. were found infected, mass-treatment was undertaken. Oil of chenopodium was first employed, then carbon tetrachloride, or a mixture of the two in the proportion of 1 : 11. Two treatments with the tetrachloride proved far the most satisfactory, in doses of 3 cc. for adults and 0·2 cc. for each year of life for children between 1 and 15 years of age. Various other preparations were experimented with, but without much success.

As regards Ascaris, the height above sea-level seemed to have some effect on the intensity of infection. At San Luis (559 metres) 22 examinations showed an average of 15 worms per head; at Morelia (900 m.) 213 examinations showed 65·5 per head. As a predisposing cause of infantile mortality Ascaris infection is believed by the author to play a considerable part. For treatment a mixture of chenopodium and tetrachloride proved better than the former alone, but not to a large extent, 87 as compared with 84 per cent. removal of worms.

Strongyloides stercoralis was rarely met with, Oxyuris and Taenia less commonly than in Europe. Filarial embryos were not seen in over 1,000 thick drop examinations of blood. Elephantiasis cases were rarely encountered, and in the author's opinion these were due to causes other than filariasis. *Onchocerca volvulus* occurs in circumscribed areas.

H. H. S.

Emily (J.). Les parasites intestinaux chez les indigènes du corps d'armée colonial en France. Traitement et prophylaxie. [**Intestinal Parasites among the Natives of the Colonial Army in France.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 694–700.

The author examined nearly 3,000 French colonial troops in order to determine the degree of infection by helminths among them. Of 906 Indo-Chinese 88·96 per cent. were parasitized; of 1,206 Malagasy 78·35 per cent., and of 875 Senegalese 67·08 per cent. Hookworm was the most prevalent in all three. Ascaris came next in the Malagasy and Senegalese, but Trichuris exceeded Ascaris in the Indo-Chinese. Treatment by thymol was given to some, to others carbon tetrachloride. According to the results detailed the tetrachloride proved somewhat superior for hookworm and ascaris, thymol curing 51·57 and carbon tetrachloride 69·87 per cent. of the former, 65·05 and 67·14 per cent. of the latter. Thymol, however, cured 43·01 per cent. of Trichuris cases whereas the tetrachloride cleared up only 21·59 per cent.

One of the patients treated with tetrachloride showed serious toxic symptoms, and the author therefore recommends that thymol only should be used. His method of administration is to prescribe 0·4 gm. calomel the previous evening, and next day 5 gm. thymol in cachets of 1 gm. at hourly intervals, followed one hour after the last dose by 25 gm. sodium sulphate. The diet is restricted to milk.

Prophylaxis consists of the erection of latrines or the use of buckets limed inside and out at each cleansing, and the prohibition of the troops visiting them barefoot.

H. H. S.

Railliet (A.). Les helminthes des animaux domestiques et de l'homme en Indochine. (2e partie.). [**The Helminths of Man and Domestic Animals in Indo-China.**]—*Bull. Soc. Zool. de France.* 1925. May 5. Vol. 50. No. 1. pp. 7–26.

Part 1 of this paper (this *Bulletin*, Vol. 22, p. 863) dealt with the Flatworms of man and the domestic animals in Indo-China. Part 2 deals with the Roundworms. The following Nematodes have been reported from man in this area :—

Strongyloides stercoralis.
Enterobius vermicularis.
Ancylostoma duodenale.
A. ceylanicum.
Necator americanus.
Ascaris lumbricoides.
Gnathostoma spinigerum.
Wuchereria [*Filaria*] *bancrofti.*
Trichuris trichiura.

Ternidens deminutus has been recorded from monkeys in Indo-China but not so far from man. *Thelazia callipaeda* is found in the eye of the dog in Burma, and Railliet accepts Leiper's view that this is the same species as has been described from man in China under the names of *Filaria palpebralis* Houghton, 1917 and *Filaria circumocularis* Ward, 1918.

T. W. M. Cameron.

Urchs (Oswald). Ein Fall mit sechsfacher Wurminfektion. [**A Case of Infection with Six Species of Worm.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Dec. 16. Vol. 29. No. 12. pp. 698–703. [13 refs.]

The account presented in this paper reads like an helminthic version of "Aurelia's Unfortunate Young Man." The patient, a man of 29

years, had become progressively emaciated and anaemic and was suspected to be suffering from tuberculosis and treated as such for a year. He then came to hospital, and ova of hookworm, Trichuris and *Schistosoma mansoni* were found in the stools. Next, the blood was examined, and many embryos of *F. bancrofti* were seen. As there was some expectoration it also was examined and ova of Paragonimus were discovered, together with nematode larvae diagnosed as those of Ascaris. To crown all, the Wassermann reaction was positive. The Paragonimus had been contracted when the patient was working in the gold-fields by the Marowijne river, separating French from Dutch Guiana.

Carbon tetrachloride (5 cc.) cleared away Necator and Ascaris and apparently, the Paragonimus also. Tartar emetic intravenously, starting with 3 cc. and increasing to 10 cc. of a 1 per cent. solution, till a total of 2·5 gm. had been given, was employed for the filarial and schistosome infections. Trichuris proved refractory.

H. H. S.

KUDICKE (Robert). Neue Verfahren zur Untersuchung und Prüfung von Wurmmitteln. Versuche an Finnen und Strongyloideslarven. [**New Methods for the Investigation and Trial of Anthelmintics: Experiments on Cysticercus and Strongyloides Larvae.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 189–197.

A new method for testing the action of dye-stuffs and anthelminthic substances is described. The question is dealt with purely from the chemical or pharmacological aspect, not the clinical, hence the results may not coincide with what occurs in the body. The author tested the effect of various dyes, such as malachite-green, brilliant-green, crystal violet, fuchsin, rhohamin B, Congo-red, trypan-red and trypan-blue, thionin, and several others, and also thymol, B-naphthol, chenopodium, chloroform and carbon tetrachloride, on *Cysticercus tenuicollis* and on the filariform larvae of *Strongyloides stercoralis*, placed in glasses so that the action of the dye or drug could be watched.

Both acid and alkaline stains penetrated the cyst-wall, and, as a general rule, those which diffused badly penetrated less well than those which diffused rapidly, but there were several exceptions. Only a few of the results can be given. Crystal violet in a dilution of 1 : 32,000 killed the cysticercus in 18 hours, thionin in 1 : 30,000, malachite-green in 1 : 16,000; trypan-red and trypan-blue appeared to have no effect in dilutions of 1 : 800 and 1 : 1,000 respectively. Thymol and B-naphthol in strong solution prove fatal in 18 hours, but beyond a certain strength the action is not more rapid. Chenopodium is no quicker, but acts in a weaker concentration.

As regards the Strongyloides larvae fuchsin is fatal in 18 hours in a dilution of 1 : 2,000, crystal violet 1 : 16,000. The last killed in 1 hour when diluted 1 : 2,000 and in 2 hours in 1 : 4,000. Concentrated thymol killed in 5 minutes, B-naphthol in 10 minutes; Oil of chenopodium did not render them motionless in less than 2 hours.

H. H. S.

CHANDLER (Asa C.). **The Helminthic Parasites of Cats in Calcutta and the Relation of Cats to Human Helminthic Infections.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 213-227. With 8 figs. on 2 plates. [23 refs.]

This paper is based on examinations of 250 cats, with a view to studying their parasites and, secondly, to determining to what extent the cat serves as a reservoir in Bengal for human parasitic infection. *Opisthorchis felineus* was found in 61 per cent., inhabiting the bile-ducts, but rarely the gall-bladder itself. *Taenia taeniaeformis* existed in 42 per cent., and *Dipylidium caninum* in 43 per cent., and infestation with the latter was often heavy, as many as 75 worms being found in some cats.

As regards Nematodes, *Strongyloides stercoralis* was found in 20 per cent. and *Belascaris mystax* in 65 per cent., but though the incidence was high, the degree of infection was generally light. An important finding was the great prevalence of *Ancylostoma brasiliense* (75 per cent.) with total absence of *A. caninum*, although the latter is widely present in Bengal. *Gnathostoma spinigerum* exhibited a peculiar seasonal prevalence—31·4 per cent. in August–November, absent in the ensuing quarter. They were not uncommonly found in the stomach wall. Since the tumours produced are not likely to disappear, the author concludes that it is the deadliest parasite to which the cat is subject.

The second part of the paper consists practically of a list of records in which these parasites have been noted as occurring in man, and the author concludes by saying that the " domestic cat in Calcutta, while serving as a reservoir for a considerable number of occasional human helminthic parasites, is not involved in the spread of any common helminthic infection with the possible exception of *Strongyloides stercoralis.*"

H. H. S.

CHANDLER (Asa C.) & CHOPRA (R. N.). **The Toxicity of Carbon Tetrachloride to Cats. A Warning.**—*Indian Med. Gaz.* 1925. Sept. Vol. 60. No. 9. pp. 406–407. [2 refs.]

From experiments with carbon tetrachloride on 87 cats the authors state that 92 per cent. died or were killed in a dying condition regardless of dosage or diet. These results are strikingly different from those of HALL and SHILLINGER (1923), but the authors are convinced that it is very unsafe to attempt the treatment of feline animals with this drug.

R. T. Leiper.

SMITH (R.) & RODRIGUEZ (J. J.). [La anemia perniciosa por parásitos intestinales.] **[Pernicious Anaemia due to Intestinal Parasites.]**—*Rev. Méd. Cubana.* Habana. 1925. June. [Summarized in *Rev. Española de Med. Cirug.* Barcelona. 1925. Oct. Vol. 8. No. 88. p. 578.]

Though symptoms of pernicious anaemia are found in some cases of infection by Diphyllobothrium and Ancylostoma, more persons harbour these parasites without developing the anaemia. Mention is made of Seyderheim's extract, " bothriocephaline," which led, after repeated injection into animals, to anaemia of the pernicious type, and, as regards ankylostomiasis, the anaemia is ascribed to haemorrhages from toxins secreted by the worms, combined with an anticoagulant extracted from the anterior part. Miners' anaemia he ascribes to syphilis, alcoholism and hard work [in these days ?] as well as to hookworms.

H. Harold Scott.

HALL (Alexander Hislop). **Observations on Bilharziosis in Iraq.**—*Jl. Roy. Army Med. Corps.* 1925. Jan. & Feb. Vol. 44. Nos. 1 & 2. pp. 1–10; 92–102. With 3 maps & 1 chart in text. [33 refs.]

Experience gained in the Army in Mesopotamia and later in the Iraq Health Service from 1919 to 1922 leads the author to state that Bilharzia is most prevalent in the Euphrates Valley from the Hindiyah Barrage to the sea, and that it exists in areas affected by the tide of the Persian Gulf. The problems of the disease differ according to the locality. In a typical rural area, e.g., the Division or Liwa of Diwaniyeh, almost the entire population of 200,000 is engaged upon agricultural pursuits and depends upon the activities of the irrigation department at the Hindiyah Barrage for the supply of water. This district is heavily infected with Bilharzia—an assessment of 80 per cent. would be no exaggeration. Practically all the cases came from the "flow" land and from the low-lying towns; in 16 small irrigation channels and stagnant pools innumerable snails could be found. The author discusses methods of eradicating the disease in these districts and believes that "the drying process is practicable in all the districts under consideration and not beyond the financial capabilities of the country."

The town of Basrah presents a somewhat different problem. An examination of schoolboys there showed infection in 1920-21 in 63 per cent. of those in the Government Schools, 48 per cent. in the American Schools, and 16 per cent. in the Jewish Schools. During the session 1921–22 the figures were 47 per cent. in Government Schools, 43 per cent. in American Schools and 29 per cent. in Jewish Schools—giving out of a total of 711 children 47 per cent. infected—all with *S. haematobium*. The author considers that complete preventive measures are not practicable in the case of Basrah but that curative treatment here can be carried out with such a measure of success that the risk of re-infection should be reduced almost to a negligible point. Remarkably few Europeans become infected with Bilharzia in Iraq. The author knows of only one case amongst the civil population, and up to the end of 1918 only 3 European Military cases occurred. In 1920, however, 111 British troops out of 495 garrisoning Kufa were found to be passing numerous ova in their urine. In the Cantonment at Hinaidi, near Baghdad, the snails collected included numerous *Isidora* (*Bullinus*) *contorta*. The channels and ponds were well cleared and the rate of water increased. Once every 3 months the water was entirely cut off for a period of 14 days. These measures produced an undoubted reduction in the snail population.

R. T. L.

FABRE (H.). Bilharziose intestinale à forme de tuberculose abdominale. [**Intestinal Bilharziasis simulating Abdominal Tuberculosis.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 653–654.

The author has seen 50 cases of *S. mansoni* infection in Guadeloupe during the past year. Three of these are recorded in detail on account of the symptoms resembling those of tuberculosis, namely, evening rise of temperature, constipation, wasting, etc. In one instance the similarity to tuberculous peritonitis was very marked. There was

continued fever rising higher towards evening, ascites, constipation and much wasting of limbs, Great improvement resulted from intravenous injection of tartar emetic given on discovery of the ova in the faeces.

H. H. S.

STÜHMER (A.). Bilharziaerkrankung der Blase. [**Bladder Bilharziasis.**] —*Dermat. Ztschr.* 1925. Mar. Vol. 43. No. 3/4. pp. 132–139. With 3 text figs.

Cystoscopic examination was made in the case of an Egyptian student who had had repeated attacks of gonorrhoea but was passing blood in the urine. Ova of *Schistosoma haematobium* were demonstrated. Three good reproductions are given of the local conditions found. In the bladder-wall there were aggregations of whitish nodules about the size of a pin's head beneath the mucous surface, which itself showed no lesions. Round the opening of the right ureter was a papillomatous swelling as large as a cherry with a cauliflower-like surface, but without surrounding inflammation. A similar but flatter growth surrounded the left ureteral opening, the adjoining mucous surface presenting a brown appearance. The blood contained 18 per cent. eosinophile cells.

Treatment with tartar emetic was undertaken, starting with 0·02 gm. ; the next day 0·03 gm., and two days later 0·05 gm. After this, blood was no longer found in the urine. The dose was increased gradually to a maximum of 0·13 gm. to a total of 1·33 gm. in the course of four weeks. Three months later the local condition was found to have improved, the papillomata were smaller and no ova could be found. The patient presented himself again 9 months later but felt so well that he refused to submit to further cystoscopy.

H. H. S.

GIBSON (R. W. B.). **Bilharziasis of the Female Genital Tract.**—*Med. Jl. S. Africa.* 1925. Sept. Vol. 21. No. 2. pp. 44–45.

This is a brief general account of schistosomiasis of the female genitalia. An interesting case is mentioned in which one Fallopian tube and its mesosalpinx were infiltrated with ova of *S. haematobium.* There was also an arrested tubal pregnancy on the same side. The other conditions mentioned have already been recorded.

H. H. S.

CAWSTON (F. G.). **Bilharzia Infection at the Source of our Rivers.** [Correspondence.]—*Med. Jl. S. Africa.* 1925. Sept. Vol. 21. No. 2. p. 58.

Measures adopted in Mauritius to train the small rivers appear suited to the eradication of bilharzia carriers from streams in South Africa. On the mines dams which are known to be infested should be treated with cyanide from the dumps. Slaked lime is stated to be of even greater practical value against snails than copper sulphate in shallow portions of large collections of water. The author also expresses regret

that the Government has erected a large dam at Hartebeestpoort without utilizing any methods for keeping molluscan intermediaries under control.

R. T. L.

CAWSTON (F. G.). *Schistosomum? spindalis* **Montgomery in a Zululand School-Boy.**—*Jl. Trop. Med. & Hyg.* 1925. Nov. 16. Vol. 28. No. 22. p. 406. [4 refs.]

In the urine of a schoolboy, 14 years of age, suffering from haematuria were numerous eggs of *S. haematobium*. About one-fifth of the eggs possessed a straight border when viewed from the lateral position but when viewed from above presented the appearance of the outline of those of *S. bovis*. The terminal spine was not heart shaped. "The fully developed ovum measured 0·24 mm., but as the extremities of the shell were solid the miracidium did not appear to be much longer than that of *S. haematobium*."

R. T. L.

CHRISTOPHERSON (J. B.). **Rectal Injection of Tartar Emetic for Bilharziasis.** [Correspondence.]—*Brit. Med. Jl.* 1925. Nov. 7. pp. 866–867.

Referring to papers by WILSON (this *Bulletin*, Vol. 20, p, 215) and Barcroft ANDERSON (*B.M.J.* 1925, p. 700), in which the rectal injection of antimony for bilharziasis is advocated, the author recognizes that although all well-equipped doctors might not agree that an enema is simpler, safer or more convenient than an intravenous injection, rectal injections are undoubtedly more appropriate for nurses and unqualified persons and might be preferred by them in the tropics, although the author believes that it has been tried by nurses in Nyasaland and abandoned. The difficulty is that no one has satisfactorily shown what becomes of the tartar emetic when given as an enema, and although the immediate effects may seem satisfactory there is the possibility of the adult worms surviving and giving rise to relapses.

R. T. L.

CAWSTON (F. G.). **The Use of Emetine in treating Bilharzia Disease in the Child.**—*Jl. Roy. Army Med. Corps.* 1926. Jan. Vol. 46. No. 1. pp. 57–60.

In the successful treatment of urinary schistosomiasis by emetine not only the dose but the length of treatment is important. The author found that a permanent cure was assured in all patients under 15 years of age who were able to tolerate a total of 12–15 grains in not more than 24 days. Among the examples given is one in which 10¾ gr. failed to cure a boy of 10 years when the treatment was spread over a period of 40 days, but ten months later cure was effected by 13½ gr. in 24 days. Nevertheless, he states that the use of emetine is unwarranted in cases where intravenous tartar emetic can be employed. Details of three patients in one family are given: in one, a girl of 12 years, recovery resulted from 11½ gr. in four weeks; a boy of 9¾ years needed 6¼ gr. of tartar emetic after 8¼ gr. of emetine, while a boy of 14 years received

in all 10 gr. of tartar emetic and 2 gr. of emetine before cure was brought about. Emetine was not persisted with if tachycardia, weakness of limbs or other signs of cardiac depression became manifest.

H. H. S.

Bacigalupo (F.). Schistosomose vésicale d'origine européenne. [**Urinary Schistosomiasis of European Origin.**]—*C. R. Soc. Biol.* 1925. Oct. 30. Vol. 93. No. 30. pp. 1020–1021.

The author states that urinary schistosomiasis does not occur in Buenos Aires except in imported cases. He has seen 20 such, and all were from Portugal. He has tried experimentally to infect various local snails, but without success.

H. H. S.

Fairley (N. Hamilton). **Complement Fixation with Bilharzia. Part I. The Lipoidal Nature of Cercarial Antigen as used in the Complement Fixation Test for Mammalian Bilharziosis.**—*Jl. Path. & Bact.* 1925. Oct. Vol. 28. No. 4. pp. 591–606. [30 refs.]

It has been generally agreed that only protein or a closely allied substance can function as an antigen in the strict sense, i.e., be capable of stimulating the production of specific anti-substances (antibodies) when introduced into the living body. Evidence of the specific relationship between the antigen and the homologous anti-substance (contained in the serum of the treated animals) is afforded by the fact that when the two are brought together *in vitro* under suitable conditions they combine and so some physical or chemical change is brought about; on the other hand, when heterologous antigens and anti-substances are mixed or when the antigen is added to serum of a normal animal the changes referred to do not occur. Now, in certain cases the phenomena of an antigen-antibody reaction are manifested when an alcoholic extract of the antigen is added to the anti-substance *in vitro*. Such is the case with the Forssman antibody; thus the antiserum derived from a rabbit injected with a watery suspension of guineapig's organs (e.g., kidney) when mixed with a saline emulsion of alcoholic extract of guineapig's tissue exhibits flocculation and possesses the power of fixing serum-complement (although the alcoholic extract cannot by itself generate the anti-substance *in vivo*). Similarly, complement fixation may be obtained with the sera of certain cases of tuberculosis when added to alcoholic extracts of tubercle bacilli. Thus, in Ehrlich's sense, the alcoholic extracts in those instances appear to contain the "receptors." It has been found that the active constituent of the alcoholic extract may reside in the ether-soluble, acetone-insoluble fraction, i.e., the lecithin. But this crude lecithin may not be the essential constituent; it may merely have attached the latter to itself. Investigation of lecithin and allied lipoids has shown that they do not lend themselves readily to purification by chemical methods; and that, as ordinarily prepared, they are usually mixtures of allied substances; also they have a great capacity for retaining or adsorbing substances of other kinds.

In the case of a number of helminths the receptors have been stated by various investigators to pass into solution when the worms are extracted with alcohol. In connexion with *S. mansoni* and *S. haematobium* infections in man Fairley found that a suitable antigen was

obtained by extracting with absolute alcohol the corresponding cercariae located in the livers of the infected snails.* His present work is an investigation of *Schistosoma spindalis* infection in goats. The snails infected with the cercariae of this worm were used as the source of " antigen " and the complement fixation reaction was tested for by the use of the sera of 3 infected goats (2 experimental infections and 1 natural). By way of control the sera of 3 non-infected animals and also human sera from cases of frank syphilis which gave a positive Wassermann reaction were employed. The sera were heated at 55·5°C. for 15 minutes before the test. The alcoholic antigens were prepared in several ways, viz., (a) by extracting with absolute alcohol moist, freshly dissected livers infected with cercariae ; (*b*) by extracting with various strengths of alcohol infected livers which had been previously dried over sulphuric acid at reduced pressure and then powdered (the strengths of alcohol used were absolute, 90, 75, 50, 30 per cent. ; (*c*) by treating with dry acetone and then extracting with absolute alcohol dry material similar to that used under (*b*), (*d*) the residue obtained after procedure (*c*) was extracted in two alternative ways—with 50 per cent. alcohol or with saline (0·85 per cent. NaCl). All the extracts prepared by procedures (*a*), (*b*) and (*c*) when used in high dilutions—e.g., 1/300 or even 1/600 in the case of antigens (*b*) and (*c*)—led to fixation of complement in the presence of the sera of the infected goats, whereas little or no fixation resulted with syphilitic or normal sera in 7 to 10 times greater, or, in the case of extracts made with the more dilute alcohols, in even higher concentrations of the antigen. In the above tests a fixed amount of complement (3 doses for the test corpuscles) was used and a fixed amount of the sera to be examined. Another method of demonstrating the reaction was also employed, viz., an amount of the antigen which in preliminary tests had been shown to be less than that which yielded complement fixation with syphilitic sera was tested in a series of tubes, each of which contained the same fixed amount of the sera to be examined, but to which varying amounts of complement were added, viz., $1\frac{1}{2}$ up to 12 or 15 doses. Here again the amount of complement fixed by the antigens in the presence of the infected goats' sera was from 3 to 10 times greater than that fixed in the presence of normal or syphilitic sera. Anticomplementary or haemolytic properties of the antigens were not disturbing factors. Thus the methods employed for detecting the presence or absence of complement fixation were exceedingly thorough. As an example, the results in the latter series of tests showed that an antigen prepared from dried infected livers extracted with 90 per cent. alcohol fixed completely 9 doses of complement along with infected goat's serum, but failed to fix 3 doses along with normal goat's serum or syphilitic serum. The antigens prepared with dilute alcohol were somewhat weaker than those made with alcohol of 75 per cent. or higher concentration. The antigenic effect of the fraction soluble in acetone was practically negligible. The constituents extracted by the procedures under (*d*) were practically devoid of antigenic properties. The extracts prepared with absolute alcohol from moist, as well as dry, livers gave negative reactions with various chemical tests for protein.

* A similar extract prepared from the livers of *Bullinus dybowski* infected with *Gastrodiscus aegyptiacus* cercariae did *not* fix complement in the presence of bilharzial sera. This result permitted the conclusion to be drawn that " the antigenic properties of the extract of snails' livers infected with bilharzia must be dependent upon specific substances extracted from the cercariae themselves." (Fairley, *jl. Roy. Army Med. Corps*, 1919, Vol. 32, p. 243.)

The general conclusion reached is that the specific reacting substances contained in the livers of snails infected with bilharzial cercariae are extracted by practically pure alcohol and are lipoidal, not protein in nature. One of the experimentally infected goats whose serum was negative to begin with yielded a positive reaction in a week after inoculation, and its serum continued to react positively until autopsy, about 17 months later. Fairley's work is described with great exactitude, and his observations present a close analogy to phenomena observed in the case of heterophile antigens and of the Wassermann reaction. The conclusions as to the nature and solubility of the bilharzial antigen differ from those published by Miss G. Z. L. Le Bas in the case of the antigen contained in the livers of snails infected with cercariae of *S. mansoni*. In an Addendum to Fairley's paper, Miss Le Bas draws attention to certain differences in the methods of preparing the antigens and in their properties, as recorded in the respective authors' works.

C. H. Browning.

Newham (H. B.). **The Pathology of *Clonorchis* Infection of the Pancreas.**—*Jl. Trop. Med. & Hyg.* 1925. Dec. 15. Vol. 28. No. 24. pp. 437–438. With 6 figs. on 1 plate. [3 refs.]

Clonorchis infection of the pancreas, though previously recorded by several writers, is, as compared with involvement of the liver, sufficiently uncommon to render the report of another case interesting. The author describes the naked-eye and histological changes set up by the presence of the parasite in the pancreatic ducts, in particular the distension of the lumen and the local proliferation and metaplasia of the epithelium. It is a matter for regret that nothing is known of the clinical history of the case nor of the condition of the liver. One of the microphotographs accompanying the article strongly suggests commencing malignancy, as the author remarks, and it would be interesting to know whether the irritative effect is accompanied by a local eosinophilia such as is known to occur with some other helminthic infections.

H. H. S.

Faust (Ernest Carroll) & Nishigori (Masao). **A Preliminary Report on the Life Cycles of Two New Heterophyid Flukes occurring in the Sino-Japanese Areas.**—*China Med. Jl.* 1925. Oct. Vol. 39. No. 10. pp. 914–916. [2 refs.]

Two new species of a new genus of Heterophyid trematode named *Monorchotrema taihokui* and *M. taichui* are described in this preliminary note. They occur in nature in the night Heron (*Nycticorax nycticorax*) and in dogs in the regions of Taihoku and Taichu in Formosa. The former develops in *Melania reiniana* var. *hidachiens*; the latter species in *Melania obliquegranosa*. Experimentally they have been developed in various mammals including man. After leaving the molluscan intermediary the cercariae encyst in the outer cartilaginous parts of certain freshwater fish.

A brief description of these minute worms, which measure 0·39 and 0·35 mm. respectively, is given, but a fuller account of the morphology of the parasites is promised in a later communication.

R. T. L.

Dew (H. R.). **Daughter Cyst Formation in Hydatid Disease; Some Observations on its Causation and Effects.**—*Med. Jl. Australia.* 1925. Oct. 24. 12th Year. Vol. 2. No. 17. pp. 497–505. With 5 text figs. [14 refs.]

This is a most informative article, and one which will do much to clear up the vexed question of daughter-cyst formation in hydatids. The whole is a well-marshalled array of facts tending to prove that when the normal development of brood-capsules in the primary cyst is interrupted, as it were, by daughter—and perhaps grand-daughter—cyst stages, this is not a haphazard procedure, but the result of some agent detrimental to the welfare of the cyst. The theories usually formulated are first stated: (1) That there are two distinct parasites. This has been disproved by experimental, clinical and pathological evidence. (2) That daughter-cyst formation occurs in cysts which have attained their full development. They may, however, be found in some young cysts and are often absent in large ones of many years' growth. (3) That they are the result of some accident or interference with the original cyst; in other words, their formation is a defensive action on the part of the parasite. Such accidents include mechanical trauma, such as blows, muscular contractions, or operative interference, as puncture by a trocar; chemical trauma, such as entry of bile or urine into the cyst in too small amount to kill it, or between the cyst and its adventitia; or, lastly, bacterial trauma, such as infective processes or general toxaemia.

Examples of the modes of action of these are given, a few of which may be quoted. Slight trauma may result in the separation of a portion of the germinal membrane into the cyst-fluid, and since the delicate scolices would be thus endangered, the membrane reacts by forming a fresh laminated layer for protection and starts again. Escape of fluid, as in operative puncture, would endanger the scolices by lowering tension, and a similar reaction is set up. The author brings forward pathological evidence in favour of his thesis. Thus, daughter-cysts are fairly common in hepatic hydatids, and they almost invariably show staining with bile (gross infection by bile causes death of the cyst), and it appears that entry of bile in small amounts provokes daughter-cyst formation. In pulmonary cysts, on the contrary, daughter-cysts are rare; here the cyst is more free to grow in the yielding and vascular tissue, while it is protected from injury by the rigid thoracic wall. When near a bronchus and infection of the perivesicular spaces occurs daughter-cysts are found. In the kidney daughter-cyst formation is the rule, the stimulus here being the opening up of urinary channels and the entry of urine. Subcutaneous cysts are liable to mechanical injury, intramuscular cysts to the same and also to interference with growth by repeated muscular contraction, and in both these situations daughter-cyst formation is invariable.

Age also plays a part; in children daughter-cysts are rarely met with, and then only in such cysts as have been subjected to adverse conditions as a suppurative process or the entry of bile. The cysts of children are young cysts; as time goes on the cysts become more liable to trauma and the proportion of cases with daughter-cysts increases.

The dangers of tapping cysts is rightly insisted upon, since it not only leads often to dissemination at the time but acts also as a stimulus to daughter-cyst production.

Immunological evidence is also in favour of the author's contention. The complement-fixation test is not always positive when simple

cysts are present, but the proportion increases where daughter-cysts are present, and complications such as rupture or operative interference raise the proportion practically to 100 per cent.

Finally, he applies his observations to clinical medicine, emphasizing, amongst others, the following points: (1) The occurrence of daughter-cysts means that there has been some complications to the cyst whereby the pathology, symptomatology, subsequent history and methods of treatment will be modified. (2) The prognosis in these cases is worse and more uncertain than in simple cysts. (3) Owing to the persistence and power of growth of the hydatid germinal membrane, puncture of a simple cyst not only cannot be relied upon to cure, but may be followed by recurrence and secondary sowing of cysts. (4) All hydatid cysts should be operated upon as soon as diagnosis is established, as all are potentially dangerous and the longer they are left the more likely are complications to occur. (5) The presence of omental hydatids, especially if they are multiple, should at once lead to examination of the pelvis and liver. (6) Whenever an intrathoracic cyst is found to contain daughter-cysts an hepatic origin should be suspected and the diaphragmatic region be investigated.

H. H. S.

Jaffé (Ludwig). Zum biologischen Nachweis der Echinokokkeninfektion. [**The Biological Diagnosis of Echinococcus Infection.**]—*Deut. Med. Woch.* 1925. July 10. Vol. 51. No. 28. pp. 1156–1157. [6 refs.]

In view of the reliance placed by many on the value of the complement-fixation test in the diagnosis of hydatid infection the five cases recorded here are of great interest. In four of them the results were definitely negative, though large hydatid cysts were found at operation in three. In one the test proved positive subsequently. The fourth was diagnosed on X-ray appearances but was not operated upon. In the fifth the reaction was returned as "suspicious," death occurred from cirrhosis of the liver, and an autopsy was held, but no hydatids were discovered.

H. H. S.

de Leon (Walfrido) & Leiva (Lamberto). **Echinococcus Cyst of the Human Lung.**—*Philippine Jl. Sci.* 1925. July. Vol. 27. No. 3. pp. 351–364. With 3 text figs. [16 refs.]

Among 8,000 autopsies the authors found one case, a woman aged 34 years, with two small hydatids at the root of the left lung, death being due to empyema of the gall-bladder and suppurative cholangitis. The presence of these cysts is made the text for a general account of *Taenia echinococcus* and its life-history according to the views of Leuckart, Moniez, and others. No mention is made of Dévé's work, which has done so much to clear up this vexed question, nor is the Casoni reaction mentioned amongst the aids to diagnosis. The statement that the "acephalocyst . . . may develop further into the mature echinococcus containing brood-capsules with scolices" will be news to helminthologists.

H. H. S.

Shrivastava (N. P.). **A Case of Hydatid Cyst of the Right Parotid and Submaxillary Glands.**—*Indian Med. Gaz.* 1925. Nov. Vol. 60. No. 11. p. 532.

A cyst the size of a cocoanut affecting the right parotid and with prolongations beneath the sternomastoid and lower jaw in a Gond who reared dogs for hare-shooting proved at operation to be a hydatid. It is suggested that echinococcus ova had been taken with contaminated food and had passed up Wharton's and Stenson's ducts. The swelling had been growing for 20 years.

H. H. S.

Faust (Ernest Carroll). **On a Case of Triradiate *Taenia solium* from North China.**—*China Med Jl.* 1925. Sept. Vol. 39. No. 9. pp. 800–804. With 3 text figs. [9 refs.]

The specimen, from the Deutsches Hospital, Peking, consisted of 200 cm. of a milky-white taenoid cestode passed by an European child after an anthelmintic. The worm was abnormal, having one side thick and slightly fluted, while the other was cleft up the mid-longitudinal axis. The end view of a gravid segment showed the worm to be triradiate. The uterus was injected with Indian ink, and in each of the three elements of the segment from eight to ten uterine branches could be counted. This favoured the diagnosis of *Taenia solium*. Usually, in Taenia, the successive genital pores alternate irregularly, but in this abnormal specimen all the genital pores are located on the main stem.

R. T. L.

Espié (A.). Sur l'existence de *Hymenolepis nana* en Tunisie. [*H. nana* **in Tunis.**]—*Arch. Inst. Pasteur de Tunis.* 1925. July. Vol. 14. No. 3. pp. 340–342.

In 1922 the author first found ova of *Hymenolepis nana* in the stools of a young native of Sfax, and later in two Arabs. They were also found in 28 instances out of 396 samples of faeces in Gafsa (7 per cent.). 600 persons were examined from the civil prison in Sfax and 5 per cent. were found to be passing the ova. The natives apparently exhibit no symptoms, at all events they make no complaint, but infected Europeans suffer from gastro-intestinal disturbances. It would be interesting to know the proportion of school-children infested, but permission to make this investigation has not yet been obtained.

H. H. S.

Saheki (Yoshihisa). **An Experimental Study on the Development of the Dwarf Tapeworm** (*Hymenolepis nana*).—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 305–308.

Saheki finds that the development of *H. nana* in mice, rats, monkeys and man is direct. The source of the eggs in each experiment is not stated.

T. W. M. C.

i. Pons (R.). Existence d'*Hymenolepis nana* (Von Siebold, 1852) en Cochinchine. [*H. nana* **in Cochin China.**]—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 722–723.

ii. Gedoelst (L.). A propos de l'*Hymenolepis diminuta* (Rud., 1819). [*Hymenolepis diminuta.*]—*C. R. Soc. Biol.* 1925. Dec. 18. Vol. 93. No. 37. pp. 1529–1530.

iii. Correia (F. da Silva). Presence de taenia chez un enfant de deux mois. [**Tapeworm in a Two-Months-Old Child.**]—*C. R. Soc. Biol.* 1925. Dec. 18. Vol. 93. No. 37. pp. 1555–1556.

i. Examination of 2,500 specimens of faeces of natives of Cochin-China revealed 8 cases, or 0·32 per cent., of infection with *H. nana*. The author speaks of the "apparent morphological identity of *H. nana* and *H. diminuta*"[!].

H. H. S.

ii. Gedoelst records for the first time the presence of *Hymenolepis diminuta* in monkeys. He has found it in *Cercopithecus smithi* in association with *Ternidens deminutus* and *Trichuris trichiura*.

iii. Correia records the presence of *Dipylidium caninum* in a child two months old—the infection probably coming from a pet dog which was kept in intimate association with the owners.

T. W. M. C.

Sambon (Louis W.). **Gongylonema.**—*Jl. Trop. Med. & Hyg.* 1925. Sept. 1. Vol. 28. No. 17. pp. 313–316. With 2 text figs.

This is a review of recent literature on our knowledge of Gongylonema. Sambon has examined specimens found by Alessandrini in a girl in Italy and finds that they belong to the common species of ruminants in that country—*G. scutatum*.

T. W. M. C.

Yokogawa (Sadamu). **On a New Species of Nematode, *Gongylonema orientale*, found in Formosa.**—*Jl. Parasit.* 1925. June. Vol. 11. No. 4. pp. 195–200. With 5 figs. on 1 plate. [4 refs.]

This new species of Gongylonema was obtained by experimentally feeding white rats. It is closely related to *G. neoplasticum*, both in morphology and pathology. It reaches maturity in 35 to 42 days.

T. W. M. C.

Yokogawa (S.). **On the Cancroid Growths caused by *Gongylonema orientale* n. sp. in the Rat.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. Mar. English summary pp. 1–20. With 6 figs. on 1 plate. [In Japanese.]

Experimental studies with *Gongylonema orientalis*, which the author had found as a new species infesting the epithelium of the mucosa of the cardiac portion of the stomach, oesophagus, tongue and mouth of the rat, showed that cancroid growths eventually supervened in the foci of thickening and the papillomatous and heterotropic deep growths of the mucosa.

R. T. L.

Yokokawa (Sadamu). **On Epithelioma of the Mucous Membrane of the Stomach, Esophagus and Oral Cavity of the Rat due to the Infection from *Gongylostoma orientalis*, Yokokawa.**]—*Taiwan Igakkwai Zasshi* (*Jl. of Formosan Med. Soc.*) [Summarized in *Japan Med. World.* 1925. Sept. 15. Vol. 5. No. 9. p. 255.]

The author fed albino rats daily with one or two specimens of *Gongylostoma* [misprint for *Gongylonema*] collected in Taihoku City or its vicinity. He found that he could successfully induce epithelial changes, i.e., the proliferation of the epithelial flat cells, which layer the worm was found to

infest, proliferation and hypertrophy of the mucous epithelium, papillomatous growths and adventitious deep growths. These changes were found to be only the proliferation of the normal cells, but if inflammatory stimuli of any kind were applied at the same time there occurred a development of carcinomatous changes.

R. T. L.

Schulz (R. Ed.). Sur la morphologie du *Physaloptera caucasica* von Linstow, 1902, de l'homme. [**Morphology of** *P. caucasica*, **a Human Parasite.**]—*Ann. Parasit. Humaine et Comparée.* 1926. Jan. 1. Vol. 4. No. 1. pp. 74–84. With 6 text figs. [3 refs.]

After a careful and detailed re-examination of the type of specimens of *P. caucasica*, Schulz finds that it differs from the only other species of Physaloptera recorded from man, *P. mordens* Leiper, in the following particulars :—

	P. caucasica.	*P. mordens.*
Total length		
Female ...	24 mm.	41–100 mm.
Male ...	12 mm.	29–34 mm.
Teeth	Presence of small teeth on border of lips.	No teeth present.
Spicules		
Left... ...	3·2 mm.	4·6–5·5 mm.
Right ...	·62 mm.	·476– ·5 mm.
Eggs	·065 mm....·045 mm.	·045–·049... ·032–·034 mm.

Schulz also finds that v. Linstow's description was wrong in several particulars.

T. W. M. C.

Corson (J. F.). **A Note on Microfilariae in Tanganyika Territory.**—*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 381–386. [18 refs.]

The embryos of *Filaria bancrofti* and *Acanthocheilonema perstans* are the only known forms of filarial embryos proved to occur in Tanganyika Territory. The author examined 768 thick films, mainly of Africans but also of a few Indians, and found embryos in 6·7 per cent. Of 140 school-pupils 5·7 per cent. had embryos of *F. bancrofti* and one *perstans*, while amongst 140 prisoners there were 7 of the former, 5 of the latter.

These figures are no gauge of the prevalence of filariasis, since the films were made in the daytime and the periodicity, in the former at least, is very marked even at corresponding hours on different nights (e.g. 235 and 604 in 20 cmm., of blood at 11 p.m.), whereas in the daytime they might be so few as to be missed altogether.

H. H. S.

Humphry (E.) & McIntosh (Ronald D.). **Notes on Cases of Filariasis in North Queensland.**—*Med. Jl. Australia.* 1925. Aug. 8. Vol. 2. No. 6. pp. 165–169. With 4 text figs. [5 refs.]

Six cases of filariasis are reported from Queensland. There is nothing particular to note about them, but they are serviceable in bringing forward, firstly, the fact that cases of this disease are not infrequent in

Queensland, and, secondly, that in patients complaining of "rheumatic" joint pains, and others having acute abdominal attacks with pain and vomiting, the possible filarial cause should be borne in mind.

H. H. S.

Herrmann (R.) & Genevray (J.). Filariose chez un Européen en Nouvelle-Calédonie. [**Filariasis in a European in New Caledonia.**] —*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 651–652.

Filariasis appears to be rare in Europeans in New Caledonia. One case was recorded in 1911 and no more until the one here given, in 1923. The patient, a boy of 13 years, had haematochyluria and embryos of *Filaria bancrofti* were found in the fluid. Treatment by injections of sulpharsenol, 12, 14 and 24 cgm. at 48-hour intervals was followed by clearing of the urine and disappearance of the embryos. The following year, however, embryos, though few, were found in the blood, but the patient, regarding himself as cured, refused further treatment.

H. H. S.

Decrop & Stier. Sur un cas de filariose observé à Tanger. [**A Case of Filariasis at Tangier.**]—*Bull. Soc. Française de Dermat. et Syph.* 1925. July. No. 7. pp. 362–363.

Filarial infection is rare in Tangier. The author gives clinical notes of a case from the town of Tangier with cardiac symptoms in which filaria embryos were associated with schistosoma eggs in the urine.

R. T. L.

Takeshita (Shyoji) & Okuda (Midzuho). [**On the Cultivation of Bancroft's Filarial Larvae and Animal Inoculation Experiments.**]—*Igaku Chuo Zasshi* (*Central Jl. of Med.*). 1925. Aug. Vol. 23. No. 3. [Summarized in *Japan Med. World.* 1925. Oct. 15. Vol. 5. No. 10. p. 296.]

It is stated in the English summary that the authors have devised two kinds of apparatus for the "cultivation" of the larvae of *Filaria bancrofti*. In one the larvae lived for 12 to 14 days in normal saline or "cattle haemoglobinized saline." In the other with the same medium the larvae could be kept alive 23 days. The optimum temperature was "11–5 C." Using slices of animal organs especially of lung and liver the results obtained were inferior to those obtained by the use of "cattle haemoglobinized saline."

R. T. L.

Okuda (Mizuho). [**On Filariasis Bancrofti.**]—*Igaku Chuo Zasshi* (*Central Jl. of Med.*). 1925. Sept. Vol. 23. No. 5. [Summarized in *Japan Med. World.* 1925. Nov. 15. Vol. 5. No. 11. p. 320.]

There is no specific drug for the cure of filariasis, but urotropin, filarisin, salvarsan and "Yamada's Filaria Pills" were found by the author to ameliorate the symptoms of chyluria.

R. T. L.

Abel (E.) & Brenas (P.). Méningite grave d'origine ascaridienne. **Grave Meningitis of Ascaris Origin.**]—*Arch. Méd. des Enfants.* 1925. July. Vol. 28. No. 7. pp. 426–432. [22 refs.]

The case of a child, seven years of age, is recorded in whom symptoms very suggestive of tetanus appeared, later yielding place to those of meningitis—rigidity of limbs, positive Kernig's and Brudzinski's signs, delirium, etc. The cerebrospinal fluid showed 250 cells per cmm., 65 per cent. of which were polynuclears and 35 per cent. lymphocytes. Cultural tests for the meningococcus were, however, negative, and after a week of anxiety a dose of santonin expelled a dozen ascarides and by the following day improvement was marked. The results of examination of the spinal fluid point to a definite meningitis rather than to a reflex "meningismus," and the case is instructive in showing from the clinical aspect that such do occur, and from the helminthological that the toxins of ascaris appear to have a certain predilection for the nervous system.

H. H. S.

Brayne (W. F.). **Ascaris in the Bile Ducts.** [Memoranda.]—*Brit. Med. Jl.* 1925. Dec. 12. p. 1122.

The following post mortem appearances following the invasion of the liver with ascarids are unusual :—

"A Chittagonian male, aged about 40, was admitted to Akyab Hospital suffering from intestinal obstruction. He was jaundiced and his condition extremely bad. No history could be obtained.

"At the operation the colon was found to be constricted by dense adhesions in the neighbourhood of the gall bladder. The peritoneum was deeply bile-stained, and the gall bladder very large.

"I had just freed the colon from the adhesions when the patient's condition necessitated stopping the operation, and he died shortly after leaving the theatre. I made a *post-mortem* examination immediately. The gall bladder, common bile duct, cystic duct, and hepatic duct were full of large ascarides. The gall bladder was greatly dilated, the ducts slightly so. On making a section through the liver numerous large ascarides were found in the bile ducts. The cut liver presented an extraordinary appearance; two or three worms had been cut across, but some six or eight live worms were peeping out from the cut end of the bile ducts on each side of the incision.

"There was no fistula of the gall bladder. Unfortunately, the attempt to preserve the specimen *in statu quo* failed, as the worms crawled out of the ducts when the liver was put in formalin."

R. T. L.

Ogata (Seiji). **The Destruction of Ascaris Eggs.** —*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 301–304.

Ogata finds that hot water is an excellent medium for the destruction of Ascaris eggs—one second at 75° C., 10 at 70° C., and 10 minutes at 65° being required to kill them. Temperatures of 60° and lower were not effective. The power to develop, however, seems to be lost after immersion for one second at 70°, two at 65°, five at 60°, 50 seconds at 55° and 45 minutes at 50°.

T. W. M. C.

ISOBE (M.). **Some Findings from Investigations on Ascaris and Ascariasis.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. July. No. 244. English summary p. 5. [In Japanese.]

(*a*) Irregular brown or greyish-black cicatrices are often found on the bodies of *Ascaris lumbricoides* and *A. suilla*, especially on the lateral lines or in the anterior or posterior third of the body, and are apparently caused by some mechanical injury. In about 699 females they occurred in 152 cases and in 412 males in 70 cases.

(*b*) In vegetables produced in the suburbs of Taihoku the author found 13 fertilized eggs of Ascaris on one spinach plant, two eggs containing larvae and one fertilized egg in an onion, and one larva-containing egg and a fertilized egg in a big cabbage.

(*c*) Santonin is not only a better anthelmintic but is economically cheaper than the active principle of *Digenia simplex*.

R. T. L.

OHBA (Tatsunosuke). **Experimental Studies on the Morphological Changes of the Blood in Ascariasis.**]—*Taiwan Igakkwai Zasshi* (*Jl. Formosan Med. Soc.*). 1925. Mar. No. 240. [Summarized in *Japan Med. World*. 1925. Aug. 15. Vol. 5. No. 8. p. 224.]

In experimental animals haemoglobinic anaemia developed in 46 per cent. but in no case was there erythrocytal anaemia. In 83 per cent. leucopenia developed within 1–5 days. In 3–9 days there was a temporary leukaemia when the number of the leucocytes attained twice the normal (in 62 per cent. of all the experimental animals).

75 per cent. of the cases of leucopenia was due to the numerical decrease of pseudo-eosinophiles. Leukaemia was seen also to be due to this kind of leucocyte. Lymphocytal leucopenia developed in 60 per cent. of the fatal cases. The blood features did not return to normal until about 40 days. Similar changes followed the injection of body fluid of ascaris or an emulsion of ascaris body, but in these cases the reactions were much slighter and lasted a much shorter period.

R. T. L.

KOINO (Shimesu). [**On the Distribution of Ascarid Larvae in the Lungs during the Transmigration through the Animal Bodies.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. July. No. 2428. [Summarized in *Japan Med. World*. 1925. Sept. 15. Vol. 5. No. 9. pp. 252–253.]

In experimental infections on the mouse the ascaris larvae occupy mostly the more superficial layers of the lung tissue and rarely the more central regions. They are found more commonly where the capillaries are straight than where there are crooked capillaries. The author failed to induce the experimental occurrence of ascarid nephritis reported by YOKOKAWA.

R. T. L.

OHBA (Tatsunosuke). [**On the Frequent Occurrences of the Ascarid Larvae in the Urine during the Initial Stage of Ascarid Infection and on its Duration in the Experimental Ascariasis.**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. June. No. 2425. [Summarized in *Japan Med. World*. 1925. Aug. 15. Vol. 5. No. 8. p. 219.]

Ascaris larvae appear in the urine 15 hours after infection, and the numbers present reach the maximum on the 5th–6th day, continuing until the 8th–9th day when experimental animals usually die.

R. T. L.

Suyi mori (Susumu). [**On the Ophthalmic Changes in an Early Stage of Ascariasis.**]—*Taiwan Igakkwai Zasshi* (*Jl. Formosan Med. Soc.*). 1925. Feb. No. 239. [Summarized in *Japan Med. World.* 1925. July 15. Vol. 5. No. 7. p. 192.]

In guineapigs and monkeys fed experimentally with ascarid larvae the author found in many cases that the larvae invaded the ophthalmic tissues, especially Harder's glands (in guineapigs), choroid, etc., as well as the ophthalmic nerve and the retina. In these tissues the larvae occurred both in the blood capillaries and in the tissues. When wedged amongst the tissues they were surrounded by cell infiltration or even haemorrhage In the retina there were haemorrhagic foci.

R. T. L.

Muto (Masatomo) & Sasaki (Narinobu). [**Clinical Experiments on Digeratin, an Anti-Ascarids.**]—*Aichi Igakkwai Zasshi* (*Jl. Aichi Med. Soc.*). 1925. Jan. Vol. 32. No. 1. [Summarized in *Japan Med. World.* 1925. Aug. 15. Vol. 5. No. 8. p. 223.]

Santonin when administered alone is found to have a weak action on Ascaris. By combining with Santonin a preparation of *Digenia simplex* called Digelaxin the authors obtained greater success.

R. T. L.

Lediard (H. A.). **Ova of Oxyuris in the Appendix.**—*Edinburgh Med. Jl.* 1925. Nov. N.S. Vol. 32. No. 11. pp. 762–763. With 1 text fig.

This note accompanies the photo of a section of an appendix in which there was no outward evidence of abnormality. The section shows amongst the contents of the lumen about ten oxyuris eggs. There was no other indication of disturbance within. The patient was a youth of 21 with tenderness elicited by pressure in the right iliac fossa, and this is stated to have been due to some cretaceous glands lying beneath the appendix.

R. T. L.

Akaoi (Katsuwo). [**Biological Studies on Oxyuris.**]—*Nissin Igaku* (*Progress in Med.*). 1925. Mar. Vol. 14. No. 7. [Summarized in *Japan Med. World.* 1925. Sept. 15. Vol. 5. No. 9. p. 253.]

Oxyuris eggs hatch and develop in gastric juice and in pancreatic juice, but the presence of bile seems to inhibit their development. They cannot resist soap. Infection follows the swallowing of mature eggs. The larvae do not require an intermediate host, nor do they enter by the skin or circulate through the lung. The Oxyuris develops from the larvae to adult in the large intestine. There are two ecdyses in the growth of the larvae. Even if a mature worm shed eggs in the upper part of the large intestine these could never attain full development without first passing out of the body.

R. T. L.

Maurer (E.). Ueber Versuche mit einem neuen Wurmmittel "Helminal." [**Trial of Helminal, a New Anthelmintic.**]—*Muench. Med. Woch.* 1925. Oct. 23. Vol. 72. No. 43. p. 1840. [3 refs.]

The author treated 80 children infected with oxyuris by means of Helminal, a preparation of *Digenea simplex.* They were given 2–3 tablets daily for five days, on the first three days a decoction of garlic

in the evening, and on the last two days castor oil. Every precaution was taken to obviate re-infection by careful washing of the hands after going to stool and before meals, the wearing of special clothing and the use of white precipitate ointment in the rectum at bedtime to destroy any ova. There were no ill effects nor has the drug any objectionable taste. 70 per cent. of those treated were apparently cleared of infection, no worms or ova being found at examinations carried out for 20 days after treatment. The author, therefore, regards Helminal as a valuable medicament for oxyuriasis, though the maintenance of cleanliness and prevention of reinfection will be a difficulty with many children.

H. H. S.

Hartmann (Arthur). Zur Oxyurenbekämpfung. [**Measures against Oxyuris.**]—*Deut. Med. Woch.* 1925. Oct. 30. Vol. 51. No. 44. p. 1836.

The author has previously advocated the use of a cellulose material soaked in alum and formaldehyde for oxyuriasis. He compares it now with a preparation, Oxylax, given internally to attack the worm in the bowel. This substance is a mixture containing jalap and other purgatives taken for 20 days in a dose sufficient to produce two loose motions daily. It is maintained that the former is preferable because, by allaying the itching, there is not the same danger of reinfection by fingers soiled by scratching.

H. H. S.

Bucholz (C. Hermann). Zur Behandlung des Oxyuriasis mit Oxylax. [**Treatment of Oxyuriasis with Oxylax.**]—*Deut. Med. Woch.* 1925. Nov. 13. Vol. 51. No. 46. pp. 1914–1915. [1 ref.]

Two cases of oxyuriasis are related, in the first of which infection was very heavy, the stool sometimes being "white with worms." The patient was a boy of seven years, pale, thin, without appetite and unable to sleep owing to irritation caused by the worms. He had undergone varied treatment without effect for years. With local cleanliness and the administration of Oxylax the condition rapidly cleared. Appetite improved, he put on 3 kgm. in 9 weeks, slept well, and no worms could be found in the stool. The infection seems to have been permanently cured. The second was equally fortunate in spite of the fact that the patient, a girl of 15 years, was suffering from paralysis the result of tuberculous spinal mischief. No mention is made of the doses given or the length of the "course."]

H. H. S.

Knoller (Gabriel). Behandlung der Oxyuriasis mit Cupronat. [**Treatment of Oxyuriasis with Cupronat.**]—*Deut. Med. Woch.* 1925. Vol. 51. No. 40. p. 1664.

Butolan and Cupronat are the remedies most in vogue in Germany for the treatment of oxyuris infections. The latter is less than half the price of the former, but its use has been limited owing to the nausea and vomiting which resulted, probably from the high content of copper. A preparation is now obtainable in which this element is much reduced, and good effects without any objectionable symptoms are recorded

from the following doses :—For children under 4 years of age half a tablet [strength not stated] thrice daily for 5 days ; between 4 and 10 years a whole tablet ; above this age one tablet 4 or 5 times daily. After an interval of 3–4 days the course is repeated. As adjuncts an aperient and enemata of garlic or alum are employed.

H. H. S.

Werner (Heinrich). Ueber chronische Trichinose. [**Chronic Trichinosis.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 428–434. [12 refs.]

An outbreak of trichinosis in Berlin in 1918 affecting 20 persons and observations thereanent form the subject of this interesting paper. The author did not see them in the very early stages, but for months and even years he has had some of them under observation. General muscular pains have been very severe and in some continued for fully three years. There was some wasting, partly due to the number of fibres involved, partly to disuse of the muscles from the pain produced by movement. He thinks that several cases of so-called chronic muscular rheumatism may be due to trichinosis (Wendt records the case of a patient suffering thus for five years in which he proved Trichinella to be the cause). Another symptom noticed in some was cramps and twitching of the muscles of mastication and those supplied by the facial nerve. Diagnosis is best made by examination of fibres excised from affected muscles ; X-rays are also of service, aided by the determination of eosinophilia (5–20 per cent.) in the blood, while local eosinophilia is also present in the tissue excised. Complement-fixation (carried out by Ströbel in 1911, and later by Strausz) may be of use. Treatment is generally of no avail, though courses of baths, as at Wiesbaden, have benefited some of the author's patients.

H. H. S.

Nishigori (Masao). **On the Life History of** *Hepaticola hepatica.* **(Second Report).**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. Oct. 247. English summary pp. 3–4. With 8 figs. on 1 plate. [In Japanese.]

The author in an English abstract states that the paper contains notes on the development of the eggs, a further account of the migratory course and later development of the parasite in the definitive host and a description of the pathological changes at various stages of infection in the liver.

The large eggs repeatedly reported from the liver of rats are degenerated stages of ordinary eggs. The eggs are deposited on the liver parenchyme and are not excreted nor do they normally appear in the faeces. The eggs require from 25 to 28 days to develop at 33–34° C. In the early stages of infection some larvae migrate by the blood circulation to the lungs and thence may reach the brain, kidney or other organ, but the chief course is from the intestine to the liver by the portal system, but some after piercing the gut wall may enter the liver from its surface.

27 28 days after infection egg laying adults are to be found in the liver.

The pathological changes in the liver consist chiefly in an increase of connective tissue surrounding masses of eggs. When the infection is heavy, general cirrhosis may supervene and the host finally dies.

In severe artificial infections the rats show signs of diarrhoea, dyspnoea and congestion of the liver and die in 4 to 5 days. These phenomena indicate severe toxic effects. *Hepaticola hepatica* can invade guinea-pigs and rabbits but do not reach maturity in these animals. The cat cannot be experimentally infected, but in the dog infection is readily induced. In this animal, however, the increase in the connective tissue is slight and much lime is deposited. The liver cells are slightly atrophied and show degenerative changes.

R. T. L.

Baylis (H. A.). **Some Notes on Nematode Parasites found by Dr. Wassink in Rats and Mice.**—*Jl. Trop. Med. & Hyg.* 1925. Sept. 1. Vol. 28. No. 17. pp. 316–317. [3 refs.]

Hepaticola hepatica is recorded from the anterior portion of the stomach in rats in Holland.

T. W. M. C.

Lane (Clayton). **The Mass Diagnosis of Ankylostome Infestation. Part XIV.—Criticisms, Constructive and Otherwise.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 156–176. [8 refs.]

In this paper, presumably the last of the series, the author deals with various criticisms which have been made on the value and efficiency of his Direct Centrifugal Floatation (D.C.F.) method of Mass Diagnosis of Ankylostome Infestation, which also subserves the end of estimating the degree of infestation. It is impossible in the space allotted to deal with each point in detail, much as we would like to do so. Only the most important, therefore, can be considered.

The first objection noted is that the method "is unreliable in diagnosing Ascaris infection . . . and is unreliable for trichuris eggs." This is dealt with by the author in a subsequent part of the present paper, but it hardly seems to be a fair criticism, seeing that the D.C.F. is for the determination of *Ankylostome* infestation. It is shown, however, that by using a medium with a specific gravity in the neighbourhood of 1300 the technique is quite reliable, in fact more so than the others with which it has been compared, the Willis or the Stoll methods.

Calculations and comparisons are based on the "minimum normal ovum content," by which is meant the number of ova found per cc. of stool when a single female is normally ovipositing, and this is shown to be 30 or thereabouts.

Other objections which have been raised are: (1) That the method cannot be accurately worked by the average native assistant; (2) That it cannot advantageously be used away from fixed centres. Both these are contradicted by statements made by others who have tried all the methods independently, while the objection on the score of economy is similarly controverted, if the preliminary cost of the apparatus be set against the permanent greater efficiency; (3) That unless specimens can be examined in 48 hours the floatation methods are useless (the critic is speaking of the South Seas and the need for refrigeration). It is shown that so long as the temperature is kept below 80° F. the D.C.F. method is effective for weeks, in fact, "faeces collected in India could be reported on accurately after examination in London"; (4) that the Willis method is several times more rapid

than the Clayton Lane method. The actual time occupied in the estimation, after making the proper suspension necessary in all methods, is proved to be less by the latter than the former; (5) that when the content of ova is very high, more than 1,000 per cc., accurate counting is impracticable, using 1 cc. of the faeces as best to minimize uneven distribution of ova. This objection has very little weight, seeing that after this amount has been taken, aliquot parts can be employed and the estimation be made accurately, the total being calculated accordingly.

The affirmation that the Willis technique is more accurate in demonstrating ova of Ascaris and Trichuris is shown to be erroneous provided that the menstruum is brought to the proper specific gravity. In a sentence, the author, after judicially considering the various objections and criticisms which have been advanced against his apparatus and method, proves that his D.C.F. method is practical, more accurate and, therefore, more reliable than any of the concentration techniques hitherto brought forward.

H. H. S.

Gordon (R. M.). **The Effect of Ancylostome, Ascaris, and Trichuris Infections on the Health of the West African Native.**—*Ann. Trop. Med. & Parasit.* 1925. Dec. 16. Vol. 19. No. 4. pp. 429–460. With 2 figs. on 1 plate. [29 refs.]

This article is of great interest and serves as a refreshing counterblast to exaggerated records of the dire evils of hookworm infestation. The author carried out elaborate investigations with a view to determine the effect of the three worms mentioned upon the West African male native, physically and mentally. He demonstrates that the result on the haemoglobin percentage may be nil; in fact, one group with higher Hb reading actually contained a higher average degree of infection than another with lower reading, and about two-thirds of the heaviest infections and two-thirds of the negative cases fell into the higher Hb. group. There would seem, therefore, to be no correlation between the intensity in the individual and the Hb. reading.

Analogous findings were obtained as regards physique and general fitness. Individuals with heavy infection did not necessarily show a low standard. Two photographs illustrative of the general physical condition of 6 boys taken at random from negative or lightly infected cases and of 6 taken from those most heavily infected are reproduced, and the general appearance of the latter is better than that of the former.

Thirdly, mentality, as gauged by mental alertness and ability to learn. No relationshp could be established between the degree of infection and mentality. Of the 10 most heavily infected 6 were relegated to group B and 4 to group C (none to group A), whereas amongst the non-infected there were 26 per cent. in group A, 35 in B, 39 in C; in other words, those classed in group C were practically the same proportion amongst the non-infected as amongst the most heavily infected.

With regard to energy, that is " the keenness with which an individual attempts any mental or physical task allotted to him." Here the percentage of infected cases in each group increases with each reduction in the standard of energy, so that there is an indication of some connection between intense infection and a lowered standard of energy.

The number of individuals dealt with was small (137 for hookworm and 89 for Ascaris and Trichuris), and we must guard, therefore, against applying such happy results too generally, especially in view of the vast number of contrary statements. On the other hand, to the presence of hookworm has been ascribed almost every evil in the tropics, from rheumatism to nyctalopia, and therefore some evidence on the more cheerful side is welcome. The author finally states that before treatment, especially before "mass treatment," is applied to any native race, careful investigation as to any definite pathogenic effects of ankylostomiasis upon that race should be made and, if any are noted, with what degree of infection they are associated.

H. H. S.

Leger (Marcel). L'ankylostomiase dans les colonies françaises. [**Ancylostomiasis in the French Colonies.**]—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb. Mar.–Apr. Vol. 23. No. 1. pp. 81–101.

A survey in more or less general terms of the prevalence of hookworm infestation in the French colonies from the beginning of the century, with occasional references to even earlier times. Much research into the literature and considerable ingenuity must have been needed to compress into 20 pages the reports of numerous investigators during the period, but these records are now of little more than historical interest until they can be compared with those of more recent prevalence.

H. H. S.

Smillie (W. G.) & Augustine (D. L.). **Intensity of Hookworm Infestation in Alabama. Its Relationship to Residence, Occupation, Age, Sex and Race.**— *Jl. Amer. Med. Assoc.* 1925. Dec. 19. Vol. 85. No. 25. pp. 1958–1963. With 5 charts in text. [5 refs.]

By means of a careful study of hookworm infestation in respect of residence, age, sex and race, the authors show that the important factor in control is not the incidence, but the intensity of infestation. In other words, distinction must be made between "hookworm carriers" and those with "hookworm disease." Infestation of sufficient intensity to constitute an economic factor in the lives of the people in Alabama is demonstrated to be limited to those living in rural districts on scattered farms. Further, stress is laid upon the fact that hookworm infestation is slowly acquired and slowly lost, and that the mere wearing of shoes may be the determining factor between severe disease and light infestation. The sexes are equally attacked in childhood and, as both boys and girls begin to wear shoes at about the same age, both sexes have an equally low intensity in adult life. In studying the effect of race the Southern States form an ideal site, because conditions are favourable to high intensity of infestation. The authors' investigations have shown that when the two races are living under almost identical conditions of sanitation, economic status, occupation, soil, temperature, etc., the white may be highly infested, the negro very slightly. From these findings it is arguable that true hookworm disease as an economic menace to the people in Alabama is limited to the rural white children of school

age. It follows also that hookworm treatment should not be given indiscriminately to every person whose stools contain ova, but that it should be employed as a weapon to combat and control true hookworm disease. Finally, in dealing with the question as it affects the southern United States all that is needed is, firstly, to control the carrier by installing proper sanitary toilets throughout the rural areas and education of the people regarding the mode of infestation, and, secondly, to limit treatment to actual cases of hookworm disease in rural white school children.

H. H. S.

Howard (H. H.). **Study in Hookworm Infestation in Jones County, Mississippi, 1924.**—*Southern Med. Jl.* 1925. Sept. Vol. 18. No. 9. pp. 668–672. [5 refs.]

In 1914 hookworm infestation in Jones County was found to be 82·5 per cent.; in 1924 it was 75·8 per cent. Female children had lower infections than male (70·9 per cent. and 80·5 per cent.), and younger children fewer eggs than older. Sanitary conditions are not yet satisfactory.

T. W. M. C.

Cort (W. W.), Grant (J. B.) & Stoll (N. R.). **Hookworm Disease in China. A Preliminary Report.**—*Nat. Med. Jl. China.* 1925. Aug. Vol. 11. No. 4. pp. 282–297. With 1 text fig.

This is a preliminary report of the China Hookworm Commission which worked from June, 1923, to November, 1924, under a grant from the Rockefeller Foundation. No evidence has been found that hookworm disease is a public health problem in North China, and the writers consider that the low rate of infestation in that area is chiefly due to adverse climatic conditions, as other conditions favour its spread. In Central and South China, however, there are several well-defined areas where the disease is important. There, not only are the climatic conditions favourable to its spread, but the use of night soil as fertilizer actively disseminates the eggs. Experiments showed that in summer one month's storage of this fertilizer sufficed to kill 90 per cent. of the eggs; while the addition of 1 : 10 to 1 : 100 parts of lime destroyed all eggs in 6 to 12 days. Workers in some mulberry groves were found to be heavily infected, the infection taking place at the second picking of the leaves in June or July. After the first picking, the trees are heavily manured, often with *fresh* night soil, and the ground then becomes heavily contaminated. The writers suggest that the substitution of commercial fertilizer—as is done in other parts of China—would prevent the disease.

T. W. M. C.

Christophers (S. R.). **Part II. Enquiry on Malaria, Blackwater Fever and Ankylostomiasis in Singhbhum. Report No. 1.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 363–405. With 6 maps & 4 figs. on 1 plate.

This is a brief record of incidental examinations carried out in the course of malarial surveys. Of 50 examined one had an infection of 7,000 ova per gramme of faeces, 2 between 1,000 and 2,000, 8 between 100 and 500, 7 under 100, and 18 were negative.

Of 17 specimens of faeces taken from dry situations 12 contained ova with an average of 365. Of 30 from moister situations 20 were positive with an average of 690. It appears that the danger of any particular ground can be told from examination of faeces found upon it.

H. H. S.

Chandler (Asa C.). **The Epidemiology of Hookworm and Other Helminth Infections on Assam Tea Estates.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 407–426. With 1 map. [13 refs.]

The author carefully studied the conditions on the Moheema Tea Estate, Assam, where hookworms were rife, to determine the main factors in the spread of the disease. The incidence was found to be over 90 per cent., but soil pollution was practically limited to defaecation-sites. During work the coolies did not visit any special place, but merely squatted between tea-bushes a little distance from their fellow-workers. The usual defaecation-sites, used at other times than working hours, were 50–75 yards from the dwellings. The former source is probably an important one, since larvae on such a site are numerous, and the picker standing long enough, say 4–5 minutes, on heavily infected soil would be much exposed to larval penetration. The larvae are not carried to any distance, for the paths in the vicinity were found but lightly infected.

As regards climatic conditions: At no season is the temperature likely to prohibit the development of hookworm larvae, but the rainfall is such that from October to March the ground becomes so dry that infection is reduced practically to nil. To prevent surface soil infestation a layer of thatch 6 inches thick proved very effective, the larvae being found in fair numbers only close to the underlying earth even in rainy times. Also, the ordinary drainage trenches, which are 2-3 ft. deep and 9 inches wide, are more than sufficient to prevent migration of larvae. It was found that whereas samples taken from the bottom of a 2-ft. deep trench yielded 120-500 larvae, at a distance of 3-8 inches above the bottom only 2 were found, and only 1 in 5 samples taken from above this level. Hence, if the coolies could be persuaded to use these trenches instead of the surface of the ground the dangers and chances of infection would be much reduced.

H. H. S.

Wildman (Otis) & Betts (N. S.). **Hookworm Disease in Navy Recruits—its Diagnosis and Treatment.**—*U.S. Nav. Med. Bull.* 1925. Sept.–Oct. Vol. 23. Nos. 3 & 4. pp. 241–248. With 1 chart in text.

Hookworm was found in 23·3 per cent. of 15,929 incoming recruits for the U.S. Navy from the Southern States. The paper sets out in detail the procedures employed. In about one-third of the cases the Bass centrifugal method of detection was used, but it was replaced later by the Barber method to facilitate the work, although the latter procedure gave a slightly lower percentage of positives. The incidence varied from 4·4 per cent. in Maryland to 43·5 per cent. in Florida. One dose of 3 cc. of carbon tetrachloride caused the hookworm ova to disappear from the stools in over 96 per cent. of cases. The authors are of opinion that carbon tetrachloride, if properly administered, is

essentially harmless and gives a higher percentage of cures at much less inconvenience to the patient than any other known form of treatment. It is very important to attend to the following points :—

1. Be sure that the drug is chemically pure and is given on an empty stomach.
2. Do not give more than 3 cc. to a full-grown adult.
3. Grade the dosage to some extent in relation to body weight.
4. Administer magnesium sulphate simultaneously with the drug.

R. T. L.

ROBERTS (F. L.). **Vital Capacity of Children Infected with Hookworm.** *Amer. Jl. Public Health.* 1925. Sept. Vol. 15. No. 9. pp. 774–780. With 7 text figs. [6 refs.]

Studies such as this should subserve some useful end on account of the labour involved, but the carrying out of the examinations is one thing, evaluation of their results another, and requiring, apparently, the help of expert mathematicians. 1,000 children between the ages of 6 and 18 years were selected, all found to be harbouring hookworm. The standard deviation was computed, that is, the approximate limits within which measurements obtained are more likely to be normal, by means of the formula $S.D. = \sqrt{\frac{Sd^2}{N}}$, where Sd^2 is the sum of the squares of the deviants and N the number of observations. Thereafter the probable error is gauged by the formula $P.E. = 0{\cdot}6744898 \frac{S.D.}{\sqrt{N}}$, and the body-surface by the formula of Du Bois and Du Bois whereby the area in sq. cm. $= Wt.^{0{\cdot}425} \times Ht^{0{\cdot}726} \times 71{\cdot}84$.

By means of these and several other calculations the author concludes that hookworm does not materially decrease the vital capacity of the child population between the ages taken, nor does under-weight for height, when the group is considered as a whole, though it might do so when considered in relation to the surface area of the body. Apparently in this study the severity or degree of infection was not taken into account. If this is done, presumably the calculations will become really complicated.

H. H. S.

SAWYER (Wilbur A.). **Factors that influence the Rate of Increase of Hookworm Infection.**—*Amer. Jl. Hyg.* 1925. Nov. Vol. 5. No. 6. pp. 790–817. With 5 charts in text. [13 refs.]

In this article is presented yet another of the theses devoted to applied mathematics which are becoming a common feature of Ankylostome campaigns abroad. Having noticed that after thorough treatment of a community for hookworms there was a rapid rise, particularly during the succeeding year, towards the original degree of infection, the author, in what he correctly denominates a " somewhat speculative " discussion, attempts to show [the author's own words] :— (1.). That the rate of increase is determined largely by the ratio of the number actually present to the number which would be present at equilibrium. (2.). That, with constant environmental conditions, the rate of increase of hookworms rises with decrease in the density

of the hookworm population. (3.). That the conditions affecting hookworms and their larvae . . . determine the level of equilibrium of the intensity of infection . . . at this point the number of worms acquired equals the number lost. (4.). That the rise in the rate of increase of hookworms with diminishing density of population [of hookworms] make it desirable to plan operations to reduce the level of equilibrium. The level of equilibrium may be taken as an index of the combined effect of complex environmental conditions.

By subsequent mathematical ingenuity the author shows, with the help of three assistants, how the above aims may be carried out by the aid of Life Tables, Birth and Mortality statistics for hookworms, based on the analogy of a fruit fly, *Drosophila melanogaster*.

H. H. S.

KORKE (Vishnu T.). **Observations on the Life History of Hookworm in Nature.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 301–320. With 1 plate. [8 refs.]

This article comprises three separate studies. The first records the results of an investigation undertaken to determine the effect of physical conditions of the soil on the life-history of the hookworm in nature. Various types of soil were selected and an unpolluted plot of ground, ascertained to be such by repeated examination. This was then fenced in and a morning stool deposited upon it. At 24-hour intervals the physical character of the stool was noted and the number of ova counted, those containing larvae separately from those without, and the results expressed as numbers per gramme of faeces. It was found that unshaded ground covered with grass and vegetation was most favourable to development of larvae (such ground is commonly used for cultivation). The observations also indicated that it might be possible to select a type of defaecation ground on which the larval stages of the worm could be controlled.

The second study is of the effect of general physical conditions on the morphological characters of the larvae, and it is shown that two kinds of larval growth are met with, the well-nourished and the starved, the latter being noted in growths of long duration.

Thirdly, an attempt was made to establish certain morphological characters to distinguish the larvae of *A. duodenale* from those of *N. americanus*. No human case infected by the former alone being available, the author employed cultures from the faeces of dogs with *A. caninum*. It was found that the situation of the genital primordium is nearer the oesophagus in Necator, and that the expansion of the base of the buccal cavity is present in larvae of *A. caninum* but not in *N. americanus*.

H. H. S.

LINDTROP (Harry). **Die endemischen Brutstätten der Ankylostomiasis in Transkaukasien.** [Endemic Breeding Grounds of Ankylostomiasis in Trans-Caucasus.] *Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 666–668. [3 refs.]

When examining films of blood, as a member of the Malarial Expedition to the Trans-Caucasus, the author was struck by the number exhibiting eosinophilia. The average was 5·2 per cent., and some had

as many as 30 per cent. He therefore examined the faeces of patients attending the University clinic, 130 in all, and found that 98·5 per cent. had Trichuris, 39·5 Ascaris, 22·5 Oxyuris, 7·2 Ancylostoma, 8·9 *Taenia saginata*. Most of those harbouring hookworm were from the low-lying rice-fields by the Caspian Sea or the southern wooded parts of Lenkoran. Later, 47 more specimens were brought from Sakalaty, and 18 of these contained Ancylostoma ova.

H. H. S.

Sweet (W. C.). **Average Egg Count per Gram per Female Hookworm in Ceylon.**—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 39–42. 3 refs.

The writer considers that an "Infection Index" using Stoll's factors would be applicable to Ceylon. After allowing for several sources of error, Sweet finds that the number of eggs per gram of faeces per female hookworm is 25·6.

T. W. M. C.

Svensson (Ruth). **Observations in the Development and Longevity of Hookworm Larvae in Different Temperature Conditions.**—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 667–673. With 4 charts in text. [2 refs.]

This is a description of experiments designed to compare the length of life of the larvae of *Necator americanus*, *Ancylostoma duodenale* and *A. caninum* in soil cultures exposed to different conditions of temperature.

1. One set was kept at incubator temperature, about 34° C., to simulate that of a tropical summer. *N. americanus* and *A. caninum* hatched out in much higher percentage than *A. duodenale*, but the larvae of the human species remained alive for 15 and 17 weeks respectively.

2. Another set was placed in the incubator each day for 17 hours and for the remaining 7 hours at room-temperature, to simulate summer in a subtropical region. It was found that the larvae were less resistant than with the constant higher temperature of the incubator.

3. A third set kept at room-temperature, about 24° C. average, resembling that of summer in a temperate climate. This proved to be the optimum for *A. duodenale*.

4. At room-temperature 17 hours and in an ice-box 7 hours daily, varying between 8° and 22·5° C. *A. duodenale* and *N. americanus* showed a low percentage of hatching under these conditions, though, once hatched, they remained alive for a considerable time. *A. caninum*, however, showed a very high degree of hatching and a long life, 6·3 per cent. for more than 15 weeks.

5. In the ice-box at about 8° C. No larvae developed, and after a week the culture was transferred to room-temperature, but the eggs had been killed. Larvae, however, which had hatched at room-temperature were able to withstand ice-box temperature, *N. americanus* for 5–6 weeks, *A. duodenale* for 11–13 weeks, *A. caninum* for more than 15 weeks.

H. H. S.

Yokokawa (Sadamu) & Ohiso (Tomiaki). '**Studies on the Life History of the Ancylostoma and** *Strongylus stercolaris*. **Communication III. On Per Os Infection of the Human Ancylostoma.** — *Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. Sept. No. 2439. [Summarized in *Japan Med. World*. 1925. Nov. 15. Vol. 5. No. 11. p. 320.]; also in *Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa.*) 1925. Sept. No. 246. English summary pp. 3–4. [In Japanese.]

When mature larvae of *Ancylostoma duodenale* are given by the mouth to various experimental animals they take one or other of two different courses according to the species of the experimental animal. If given to guineapigs, rabbits or mice, they mostly penetrate into the wall of the alimentary canal. If given to dogs, the majority are quickly voided with the faeces; a small number of them remain in the gut and develop to a certain degree, but are also gradually evacuated. Comparing these results with *A. caninum*, it becomes highly improbable that the larvae of *A. duodenale* should undergo any migration if ingested by the mouth by man, the proper host. The authors conclude that pulmonary migration does not exercise any special influence on the development of the larvae, and that the passage of the larvae through the lungs after skin infection is merely an inevitable consequence of the anatomical conditions.

R. T. L.

i. Miyagawa (Yoneji). '**Criticisms on Yokokawa and Ohiso's Work "A Study on the Development of the Ancylostoma and** *Strongyloides stercolaris*. **Communication I. On the Route of Infection of Ancylostomum."**]—*Tokyo Iji-Shinshi* (*Tokyo Med. News*). 1925. June. No. 2424.

ii Yokokawa (Sadamu) & Ohiso (Tomoaki). '**Studies on the Development of the Ancylostomua and** *Strongylus stercolaris*. **Communication II. On the Per Os Infection from the Ancylostom. (A Secondary Communication).**]—*Ibid.* No. 2425. [Both papers summarized in *Japan Med. World*. 1925. Aug. 15. Vol. 5. No. 8. p. 219.]

i. The author criticizes the view of Yokokawa and Ohiso (see this *Bulletin*, Vol. 22, p. 891) that the larva of ancylostoma may attain full development in the gut without first passing through the respiratory organs.

ii. The authors report experimental cases (not summarized in the English abstract of the Japanese text) and still sustain their opinion.

R. T. L.

Asada (Junichi). '**Studies on the Development of Ancylostoma, with Special Reference to the Meaning of Per-Os Infection.**'—*Tokyo Iji Shinshi* (*Tokyo Med. News*). 1925. Sept. No. 2438. [Summarized in *Japan Med. World*. 1925. Nov. 15. Vol. 5. No. 11. p. 320.]

"Immature" encysted ankylostome larvae always take the pulmonary route before reaching maturity in the intestine, but mature larvae or Looss' so-called perfect encysted larvae do not necessarily take such a course, but can infest the intestines.

R. T. L.

Bacigalupo (J.). L'auto-infection est-elle possible dans l'ankylostomose ? [**Is Auto-infection Possible in Ancylostomiasis.**]—*C. R. Soc. Biol.* 1925. Oct. 23. Vol. 93. No. 29. pp. 966–967.

The fact that a child who was in hospital for three years was found to be passing ova of hookworms and that three courses of treatment at intervals led to the expulsion of 31, 7 and 1 worm respectively is used as an argument in favour of auto-infection. The author states that he has met with similar cases before and that beneath the nails of one patient he found an ovum in evolution and two motionless larvae.

H. H. S.

Yeager (Clark H.) & Kirk (J. Balfour). **The Treatment of Hookworm Infection with Moderate Doses of Carbon Tetrachloride and Oil of Chenopodium.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 240–248. [5 refs.]

As has been repeatedly stated, carbon tetrachloride is very effective against Necator, but not against Ascaris. Though oil of chenopodium acts against both, it is less effective against the former than is the tetrachloride, and it also takes longer to act. The toxic effects are negligible if a mixture is freshly made up and the dose within reasonable limits. It is usual, when giving the tetrachloride alone, to administer the full dose at once ; combined with chenopodium it is better in divided doses, so that, should toxic symptoms from the oil occur, the second portion can be withheld. A purgative is needed, as the oil is constipating. The authors recommend 2 parts of the tetrachloride to 1 part of chenopodium, the dose being 0·1 cc. of the mixture for each year of apparent age, with a maximum of 1·5 cc. It can be given in water in equal fractions at 1–2 hours interval, and a saline purge 2 hours after the last dose.

If, in addition to hookworm, the ascaris infection is moderate, it may be better to give plain carbon tetrachloride or the mixture, as above, and 7–10 days later the treatment by plain oil of chenopodium (or ascaridol in half the dose.)

In the latter part of the paper the usual counter-indications to the use of the drugs, the signs of poisoning, and the treatment to be adopted for them are succinctly stated.

H. H. S.

Yeager (Clark H.) & Kirk (J. Balfour). **The Employment of Carbon Tetrachloride followed immediately by Magnesium Sulphate in the Treatment of Uncinariasis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 19. No. 4. pp. 249–255. [5 refs.]

It has been recorded again and again that the simultaneous administration of a saline purgative with oil of chenopodium reduces the anthelmintic action of the latter, but the effect with carbon tetrachloride is not so established. Patients to be treated were given the tetrachloride (maximum dose 3 cc.) and immediately afterwards magnesium sulphate in the early morning, and solid food was withheld until the purgative had acted well. The stools were collected for three days and washed and the worms collected and classified. It was noted that the largest number of worms were removed from the second day's stool. Ascaris infections were practically unaffected, and not a single Trichuris was obtained. It was found that the

almost simultaneous administration of purgative and anthelmintic produced no weakening of the latter, while the liability to toxic symptoms was reduced. The procedure, therefore, is good for mass treatment work; it saves much time and is more favoured by the patients in that they are not kept so long without food.

H. H. S.

Hill (Rolla B.). **Hookworm Reinfestation in Sanitated and Unsanitated Areas.**—*Southern Med. Jl.* 1925. Sept. Vol. 18. No. 9. pp. 665–668. [3 refs.]

This paper is instructive in demonstrating the necessity of combining sanitation methods with the treatment of patients when attempts are made to deal with hookworm infestation. Two areas in Porto Rico were selected, one an unsanitated part in which there were practically no latrines and soil-pollution was gross.; the other in which all houses were provided with latrines. By treatment the intensity of infection was reduced by 84 and 97 per cent. respectively. A year later a re-survey of these districts was undertaken, and it was found that in the unsanitated district 47 out of 51 examined were harbouring the worms, and the rate was as high as before treatment had been begun, but the intensity had been reduced to about half. In the sanitated district the infestation-rate had also risen, in this case to about 50 per cent., but the intensity was much less, only 12 per cent. of that of the year before.

H. H. S.

Cort (W. W.). **Notes on the Effect of Burial on Infective Hookworm Larvae.**—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 33–38. [4 refs.]

Five-gallon oil tins were cut in half and buried in an exposed place. 100,000 to 125,000 infective hookworm larvae were deposited on the surface of the soil at the bottom of each tin. This surface was a hard packed clay. The cans were then filled to a depth of 8 inches with moist soil allowed to settle naturally. No rain fell during the period of the experiment. The daily range of temperature (Soochow, China) was from about 80° F. to 90° F.

Four of the experiments were left entirely exposed to the sun, four were constantly shaded by boards, which also greatly reduced evaporation. To two each of the exposed and covered cans enough water was added once daily to thoroughly soak the surface. The other cans received no water.

The results of examining the units which were *covered* and to which no water had been added showed that there was little stimulus to the larvae to migrate vertically, although quite a large number had worked up to 3–4 inches.

The units which were left *uncovered* and to which no water had been added showed a very great reduction in the larvae and none were found on the surface. There was very little evidence of vertical migration, but the larvae may have been killed by the drying of the soil.

In the units left *uncovered* to which water had been added daily the great bulk of the larvae were recovered from near the surface.

In this experiment the larvae, apparently, were stimulated to rapid vertical migration, and their numbers were greatly reduced by the repeated drying of the surface.

In the units which were *covered* and to which water was added daily there was a rapid and extensive vertical migration and a large recovery of larvae from the surface.

These findings confirm PAYNE'S opinion that movements in the soil water are of importance in stimulating vertical migration.

R. T. L.

BERCOVITZ (Nathaniel). **The Practical Aspects of Hookworm Control in China.**—*China Med. Jl.* 1925. Aug. Vol. 39. No. 8. pp. 673–679.

Largely owing to the universal use of night-soil as fertilizer, aided by the fact that latrines are practically non-existent, some 95 per cent. of the inhabitants of the Kachek region, Hainan Province, are infested with hookworms. Economic considerations prevent the doing away with night-soil as fertiliser, but simultaneous treatment of large numbers of the inhabitants, repeated in six months and thereafter at intervals of about a year, would, it is believed, so reduce the soil pollution that a great degree of improvement would result. After the first preliminary survey it is waste of time to examine cases, apart from the difficulty of obtaining samples of faeces.

For treatment of patients the author uses a mixture of 10 parts of carbon tetrachloride to 1 part of oil of chenopodium, the dose being 1½–2 drops for each year of age, with a maximum of 35 drops. A saline purgative is given an hour after. As the treatment cannot be made compulsory, only those who believe that there is such a disease as ancylostomiasis, and that it causes disability, will consent to take treatment; hence much educational work will be needed before the desired results are attained.

H. H. S.

MANALANG (C.). **A Hookworm Campaign in Cebu.**—*Philippine Jl. Sci.* 1925. Aug. Vol. 27. No. 4. pp. 483–493.

This is a detailed account of a hookworm campaign in Cebu and the methods of publicity adopted. The inhabitants were found to be heavily infected with hookworms, ascarids, and whipworms, and mass treatment was given. 30,000 persons received carbon tetrachloride without a single fatality.

T. W. M. C.

MEDICAL ZOOLOGY.

Herms (W. B.). **Parasitology as an Aid to the Medical Officer.**—*Milit. Surgeon.* 1925. Nov. Vol. 57. No. 5. pp. 517–528. [5 refs.]

Though there is nothing novel in it, this is a most readable paper, and illustrates with much judgment the essential sanitary services that can be rendered by a medical officer who has had some training in parasitology and medical zoology.

A. Alcock.

Pawlowsky (E. N.). Ueber Pseudoparasitismus und Xenoparasiten. [**Pseudoparasitism and Xenoparasites.**]—*Rev. Microbiol. & Epidémiol.* 1925. Vol. 4. No. 2. German summary p. 109. [In Russian pp. 1–4.]

This is a paper on a subject about which there is not, and is not likely to be, unanimous agreement, namely, exact definitions, "purged and snuffed from ambiguity," of the several grades and varieties of associated existency that can be brought into the very general concept of "parasitism." The author here distinguishes "xenoparasites" (e.g., *Dipylidium caninum* in the gut of a dog), "pseudoparasites" (e.g., maggot of *Musca domestica* in the gut of a man), and "homeoparasites" (of which he does not give a concrete example) or organisms superficially resembling parasites but living entirely on waste or waste-products of the host.

A. A.

Kessel (John F.). **A Preliminary Report on the Incidence of Human Intestinal Protozoan Infections in Seoul Korea.**—*China Med. Jl.* 1925. Nov. Vol. 39. No. 11. pp. 975–982. [8 refs.]

The author describes the conditions and technique of this survey, which was conducted in a Korean medical college and hospital. Samples of faeces from 212 individuals were examined—153 Koreans and 59 foreigners; in 82 cases 6 examinations were made; in 47 cases one examination; in 83 cases 2 to 5 examinations. The results, which are compared with a survey previously conducted by the author and Svensson in Peking (this *Bulletin*, Vol. 22, p. 832), show, as regards *E. histolytica*, that infection in Koreans (41 per cent.) was 8·5 per cent. higher than among Chinese in Peking, and infection among foreigners (25 per cent.) the same in both places (and twice as high as in Great Britain and the United States of America surveys); and, incidentally, that this infection was detected in 6 out of 9 foreigners having sprue symptoms. They also show that the incidence of Giardia (which was present in 18 per cent. of Koreans) and of Trichomonas was higher in Koreans than in China. Incidentally, Trichomonas was found along with *E. histolytica* in the pus of a Korean case of liver abscess.

A. A.

Thomas (Walter S.) & Baumgartner (E. A.). **Stool Examination for Protozoa in Eleven Hundred Inmates of a New York State Institution.**—*Jl. Amer. Med. Assoc.* 1925. Nov. 28. Vol. 85. No. 22. pp. 1725–1728. With 3 charts in text. [6 refs.]

A statement of the results of a single-specimen examination of stools of 1,122 inmates of a public institution for feeble-minded women in New York, for protozoa. 44·7 per cent. were found to be infected, a certain number being multiple infections. *Entamoeba histolytica* was found in 1·07 per cent., *E. coli* in 17·83, *E. nana* in 17·74, *Chilomastix mesnili* in 21·03, Trichomonas in 0·26, and *Giardia intestinalis* in 2·4 per cent. None of the cases of *E. histolytica* infection had ever shown any evidence of amoebic disease.

A. A.

Bruynoghe (R.) & Dubois (A.). Action du radium sur des protozoaires pathogènes. [**Action of Radium on Pathogenic Protozoa.**]—*C. R. Soc. Biol.* 1925. Sept. 30. Vol. 93. No. 28. pp. 849–850. [3 refs.]

Bruynoghe having shown that trypanosomes and treponemes lose their infective powers, though not their motility, under the influence of radium, he and his colleague now show, as a result of experiments on cultures of these organisms, that this loss of infectivity is attributable to inability to divide and multiply.

A. A.

Tsuchiya (Hiromu). **Pathogenicity of *Trichomonas intestinalis*.**—*Arch. Intern. Med.* 1925. Aug. 15. Vol. 36. No. 2. pp. 174–188. With 1 text fig. [25 refs.]

This is a comprehensive and laborious study carried out (in July–October) in the clinical laboratories of the Battle Creek Sanitarium, where the occurrence of intestinal flagellates was frequent among the inmates. The author begins with a review of the differing opinions expressed by some 18 observers as to the pathogenicity of *Trichomonas hominis*, and, after describing some methods of laboratory technique, continues with a series of summaries of the results of his various laboratory experiments and clinical observations. This record includes a tabular statement of faecal analysis (microscopic), urine analysis (albumen, sugar, casts, by-products of metabolism), blood analysis (haemoglobin, microscopic), gastric test, symptoms (gastro-intestinal, nervous, nutritional) and blood-pressure of 20 cases in which the infestation with Trichomonas was most heavy.

The author's conclusions are that *Trichomonas hominis* is a harmless inhabitant of the large intestine. Whether these flagellates are abundant or few neither laboratory nor clinical evidence conclusively warrants a pathological diagnosis. Constipation, without any history of diarrhoea, is their usual concomitant—confirmed by the proctoscope. The intestinal flora is independent of *Trichomonas hominis*.

[It is of interest to note that the conclusion drawn by Cleveland from his experiments upon the intestinal flagellates of Termopsis (a genus of "white ants") is that *Trichomonas termopsidis* "is undoubtedly of some value to its host as a symbiont" (*Biological Bulletin*, Vol. 48, No. 5, May, 1925, p. 319), also previous papers in April and May of the same year.]

A. A.

Szemö (Georg). Beitrag zur Frage der Pathogenität der Trichomonas mit besonderer Berücksichtigung der Wirkung von Ipecacuanha. [**Pathogenicity of Trichomonas and the Action of Ipecac.**]—*Arch. f. Verdauungs-Krankh.* 1925. Aug. Vol. 35. No. 5-6. pp. 318–324. With 1 fig. [14 refs.]

The essentials of this relate to a case of chronic diarrhoea, with faeces heavily infested with Trichomonas, having a previous history of an attack of dysentery in a latter stage of which jaundice occurred. Under treatment with ipecacuanha, "in doses customary for bronchitis," the consistence of the stools improved quickly and the Trichomonas disappeared. [No other organism is mentioned; but as it is stated that Trichomonas was looked for in the duodenum, and that Trichomonas "cysts" were not found in the faeces, one may presume that if an exhaustive search was made it was not very discriminative.]

A. A.

Reichenow (Eduard). Die Aufnahme roter Blutkörperchen durch Trichomonas. [**Ingestion of Red Corpuscles by Trichomonas.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 519–525. [8 refs.]

The author has studied the behaviour, in cultures, of various trichomonads from man and other animals (mongoose, macaque, chimpanzee, cat, pig), with regard to the ingestion of red blood cells. He finds that different cultures (and different animals) behave differently in this respect and that individual flagellates that have ingested red blood cells are most abundant in cultures that are rich in the five-flagellate form—Pentatrichomonas.

A. A.

Escomel (E.). Batraciens conservateurs et propagateurs de certaines flagelloses intestinales de l'homme. [**Flagellates of Man and Frogs.**]—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 521–525.

In the drinking-waters of Arequipa a frog (Telmatobius) and a fish (Atherina) are common enough; and both of them have their intestinal protozoa (parasitic or commensal), which get passed into the water. Among the intestinal fauna of the frog is a Trichomonas. The frog can also be infected experimentally with *Trichomonas hominis*; and as the author regards this flagellate as a dangerous parasite to man he thinks that—if only for this reason—the frog and the fish and the organisms upon which they live should be removed from the waters used for drink.

A. A.

Lyon (B. B. Vincent) & Swalm (William A.). **Giardiasis: Its Frequency, Recognition, Treatment and Certain Clinical Factors.**—*Amer. Jl. Med. Sci.* 1925. Sept. Vol. 170. No. 3. pp. 348–364. [118 refs.]

Most of this is a summarized version of "the literature." The authors' own experience is that infestation with giardia is concurrent with disease of the biliary tract, and he therefore advocates biliary

drainage and intraduodenal lavage with magnesium sulphate as the basis of rational treatment. In one of his cases here very briefly abstracted the patient had " continuous biliary drainage for 17 days, with a daily duodenal lavage with 1 to 5,000 silvol solution, sodium iodide intravenously, and hexamethylenamin by mouth." However, although the giardias disappeared after the 8th day of this treatment, they were back again 2 weeks after the drainage was stopped and were found in abundance in the patient's stools five years afterwards.

A. A.

Labbé (Marcel), Nepveux (Floride) & Gavrila. La lambliase vésiculaire. [**Vesicular Lambliasis.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. Dec. 3. 3rd Ser. Year 41. Vol. 49. No. 36. pp. 1505–1511.

In the course of numerous resorts to duodenal tubage for various affections the authors have lately encountered Giardia in the bile in 7 instances. They describe these 7 cases and from them they generalize a diagnosis of " Vesicular lambliasis."

In such cases you may or may not find cysts in the faeces ; if the infection be an old one and the parasites have definitely colonized the gall-bladder you probably will not. You may or may not have the symptom of vague pains about the region of the gall-bladder. What you will have is a state of things—weakness, emaciation, and cachexia —suggestive of a malignant growth somewhere ; a chronic and intractable dyspepsia concurrent with permanent or remittent diarrhoea ; and a history, perhaps an ancient history, of a definite attack of dysentery. And what you will find, if you tap the duodenum, is a multitude of living Giardia in the bile.

It is essential that the parasites be got rid of. The authors have tried stovarsol, treparsol and other compound organic salts of arsenic with varying success. They are now using essence of turpentine, since it has given good joy in intestinal lambliasis ; and they intend next to give a trial to the organic tetrachlorides and tetriodides.

A. A.

Chiray (M.) & Lebon (J.). A propos de la lambliase vésiculaire. [**Concerning Lambliasis of the Gall Bladder.**]—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. Nov. 5. Year 41. 3rd Ser. Vol. 49. No. 32. pp. 1344–1346. [5 refs.]

The authors are not convinced that *Giardia intestinalis* can infest the bile-passages, even though liquid withdrawn from the duodenum by tubage be full of these parasites. They relate, in their own experience, a case of cholecystitis due to gall-stones where, although the parasites were abundant in the duodenal fluid, not a trace of them could be discovered in the gall-bladder when carefully examined after excision.

A. A.

Pappalardo (Concetto). Lambliasi e colecistite. [**Lambliasis and Cholecystitis.**]—*Riforma Medica.* 1925. Dec. 14. Vol. 41. No. 50. pp. 1183–1186. [22 refs.]

This is a long discussion, based upon 3 cases—which also are recorded at length—of the condition now being described by French writers

as "Vesicular lambliasis"—a condition where, in cases having a certain nexus of dyspeptic symptoms and vague pains which do not necessarily designate the gall-bladder, duodenal tubage leads to the discovery that that viscus in infested with Giardia. In these 3 cases, however, rare active forms of Giardia were also observed, along with amoeba cysts, in the faeces.

A. A.

Gaivoronsky (V.). Pathogénie lambliose. [**Pathogeny of Giardia.**]—*Rev. Microbiol. & Epidémiol.* 1925. Vol. 4. No. 2. [French summary pp. 111–112. In Russian pp. 43–49.]

In this summarized clinical record of 76 instances of disorder and disease of the abdominal viscera (chiefly liver, gall-bladder, and gastro-intestinal tract) the presence of *Giardia intestinalis* in the contents taken from the duodenum is noted in 13 separate cases, the organisms being particularly abundant after ingestion of salt.

In 4 of these cases acidity was normal, in 5 subnormal, and in 2 supernormal. In 2 cases (one cholecystitis, the other gall-stone) the organisms—present in the duodenum contents—were not found in the gall-bladder.

Post-mortem, in a cachetic patient who had suffered from chronic enteritis and died of intercurrent pneumonia, Giardia was observed in the small intestine, along with changes in the mucosa of the ileum.

The conclusion of the matter is that although Giardia is not harmless, its particular connexion with disease of the bile passages is still unsure.

A. A.

Beck (M.). Choleraähnliche Erkrankung, veranlasst durch *Lamblia intestinalis*. [**A Disease simulating Cholera caused by** *L. intestinalis*.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Nov. 6. Vol. 29. No. 11. pp. 668–670.

This case occurred in East Africa, in 1915. The patient was stricken, early in the morning, with vomiting and diarrhoea. The stools, which were passed every 10 to 15 minutes, at first without pain, but afterwards with straining and smart, were perfectly clear and watery or slimy; nothing could be found in them but epithelial and scattered pus cells and, later, very numerous active forms of *Giardia intestinalis*. Cramps in the calves supervened, the belly became sunken and tender and at midday the patient was in a state of collapse. After treatment for collapse, and then some castor oil, the motions next day were fewer, and the stools bile-coloured and less slimy; and on the third day the patient was well, though cysts of Giardia were found in the stools for some time afterwards, of course.

A. A.

Panayotatou (Angélique). Sur deux cas de "Lambliose" chronique "*Giardia intestinalis*" Lambl. Guérison par le stovarsol. [**Two Cases of Chronic Giardiasis cured by Stovarsol.**]—*Rev. Méd. et Hyg. Trop.* 1925. Nov.-Dec. Vol. 17. No. 6. pp. 225–229. [4 refs.]

The author states that in Egypt—and particularly in Alexandria—active forms of *Giardia intestinalis* are the only parasites to be found

in the stools in certain cases of intractable gastro-enteritis, characterized by alternating remissions and aggravations of dyspepsia, concurrent with pain in the caecum or extending all along the colon and the passage, with tenesmus, of frequent, foetid, soft or liquid, greenish or brownish stools. He gives abstracts of two such cases cured by stovarsol as recommended by MARCHOUX, the amount given in these cases being 0·25 gm. daily, divided in two doses.

A. A.

IVANOFF (E.). Un nouveau mode de conservation et d'envoi des trypanosomes et des spirochètes dans des larves de *Galleria mellonella*. [**New Method of Keeping and Distributing Trypanosomes and Spirochaetes.**]—*C. R. Acad. Sci.* 1925. Aug. 3. Vol. 181. No. 5. pp. 230–232.

The author has much to say of the convenience and economy of distributing spirochaetes and trypanosomes for laboratory requirements in caterpillars of the bee-moth (*Galleria mellonella*). He has infected these caterpillars with *T. equiperdum*, *brucei*, *pecaudi*, and *lewisi*, and with *S. duttoni*, and finds that they hold the infection of the first for 10 days and of the others for 5 or 6 days.

A. A.

i. DESCHIENS (R.). Kystes de *Giardia* sp. observés chez le lion (*Felis leo*). [**Cysts of *Giardia* sp. observed in the Lion.**]—*C. R. Soc. Biol.* 1925. Nov. 6. Vol. 93. No. 31. pp. 1065–1066.

ii. THOMSON (J. G.) & ROBERTSON (Andrew). **The Cysts of *Tricercomonas intestinalis* Wenyon and O'Connor 1917 found in Human Faeces.**—*Jl. Trop. Med. & Hyg.* 1925. June 15. Vol. 28. No. 12. pp. 223–225. With 1 plate. [19 refs.]

iii. —— & ——. **A Note on the Flagellates of Anophelines and Culicines previously mentioned in the Literature with a Description of a Crithidial Form in a New Host *Anopheles umbrosus* from the Federated Malay States.**—*Ibid.* Dec. 1. No. 23. pp. 419–424. With 19 text figs. [39 refs.]

i. The author in a systematic survey of faeces of large carnivora captive in Paris has found cysts of Giardia in the case of two lions. Cysts in sufficient quantity to cause infection were given to two kittens by way of mouth, but did not cause infection.

ii. The cysts are described and different phases liberally figured. Observations of previous authors are considered and the conclusions of DOBELL and O'CONNOR with regard to the status of the genus *Tricercomonas* are criticized.

iii. This paper contains a full and particular summary of this subject, together with a long list of references to the original papers.

A. A.

PONS (R.). Coccidiose intestinale humaine à *Isospora belli* (Wenyon, 1922). Considérations générales. (Etude de deux nouveaux cas observés à Saigon). [**Human Intestinal Coccidiosis (*Isospora belli*). Two New Cases seen at Saigon.**]—*Bull. Soc. Path. Exot.* 1925. July 8. Vol. 18. No. 7. pp. 570–584. With 13 figs. on 2 plates.

The greater part of this paper is historical and zoological, to which are added some details (with figures) of the structure and final development of the oocyst of *Isospora belli*. Upon this useful foundation

is based a clinical account of two cases of this infection observed at Saigon. In the prologue the difficulty of infecting laboratory animals with human coccidia is confirmed, and the author infers therefrom that some sort of concurrent irritation of the intestine is necessary for success; the early history of these two cases gives countenance to this conclusion.

The first case was in a native gunner. The early symptoms—following a repast at a Chinese cookshop in the course of which some questionable eggs were consumed—so closely and completely resembled cholera that, although no vibrios could be found, the case was diagnosed as such. On the 7th day, when the patient seemed to have recovered, pains in the right knee set in and sensory and motor paresis of the anterior muscles of the leg, this lasting for about 10 days, during which stools were normal. On the 18th day colic and diarrhoea recurred, the stools now consisting of mucus streaked with blood, and although no organisms but Giardia could be discovered the patient was treated for amoebic dysentery, finally recovering on treparsol. On the 45th day colic and diarrhoea recurred again; the stools were simply stercoraceous and in them oocysts of Isospora were discovered, on the 47th day. Oocysts continued to be passed for 30 days, the patient complaining of vague pains in the right flank and being treated with treparsol. No enlargement of spleen or liver occurred in this case. Among the faecal contents there were Charcot-Leyden crystals.

The second case was in a European woman. The earliest symptoms—diarrhoea and sharp colic—were traced to a meal at an hotel, for some months after which the patient suffered from continued alternations of diarrhoea and constipation, oocysts not being discovered until 9½ months had elapsed. They continued to be passed for 16 days and disappeared after treatment with santonin and calomel, but the intestinal troubles recurred after the oocysts had disappeared. In this case the liver was considerably enlarged and tender, and Charcot-Leyden crystals were not found in the stools.

A. A.

Pinto (Cesar) & Pacheco (Genesio). Sobre a presença da "Isospora belli" Wenyon, 1923 no Brasil. ["*Isospora belli*" **in Brazil.**] —*Sciencia Medica.* 1925. July 31. Vol. 3. No. 7. pp. 447–453. With 12 figs. [6 refs.]; also in *C. R. Soc. Biol.* 1925. Nov. 20. Vol. 93. No. 33. p. 1258. [1 ref.]

A precise account, documented and abundantly illustrated, of a case of chronic dysentery with faeces abundantly infested by oocysts of *Isospora belli* Wenyon, and also containing evidence of *Giardia intestinalis*, *Chilomastix mesnili*, *Trichomonas hominis*, and *Trichuris trichura*, besides active and precystic forms of *Entamoeba histolytica*. The patient was a Brazil-born child of European parents.

A. A.

Adie (Helen). Nouvelles recherches sur la sporogonie de *Haemoproteus columbae*. [**Fresh Researches on the Sporogony of** *H. columbae*.]—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 9–15. With 4 figs. on 2 plates & 5 text figs. [7 refs.]

The main facts of the sporogony of *Haemoproteus columbae* in the Hippoboscid fly *Lynchia maura* were discovered (in India) and made known by Mrs. Adie in 1914, and, owing to the fact that they did not then receive the attention to which they were entitled, have been republished, with all necessary amplification of detail, more than once

since then. Mrs. Adie has recently repeated her work in Dr. Edmond Sergent's laboratory in Algiers (see this *Bulletin*, Vol. 22, p. 279), and has now set it forth with full illustrative detail (2 plates and 5 text-figures).

A. A.

Taliaferro (Lucy Graves). **Infection and Resistance in Bird Malaria, with Special Reference to Periodicity and Rate of Reproduction of the Parasite.**—*Amer. Jl. Hyg.* 1925. Nov. Vol. 5. No. 6. pp. 742–789. With 9 charts in text. [15 refs.]

This is an "intensive" study of the course of experimental infections of 6 canary birds with the parasite of bird-malaria (which the author is inclined to call *Plasmodium praecox*), with corroborative contributions from 11 other similarly infected birds. Two infective strains were employed; one (new strain) from a recently captured New York sparrow, the other (old strain) a laboratory strain which had been run since 1913, through a series of canaries, from a sparrow captured in New York. The experimental infections were made by injecting about 0·5 cc. of a normal saline dilution of infected blood into the muscle of the breast. In the collection of the data required the number of parasites was the calculated proportion of parasites per 10,000 red blood cells; the mean size of the parasites was determined from camera (c. 3,000) drawings of 100 (sometimes only 50 were to be obtained) parasites; and the coefficient of variation was calculated from formulae given. The duration of the non-sexual cycle and the rate of non-sexual reproduction of the parasite were determined by plotting the mean size of parasites at four-hour intervals and noting the lapse of time between points when only large schizonts "exist in the blood."

From the data laboriously obtained the following are the main conclusions reached regarding the behaviour and fate of "Plasmodium praecox" in the bird host. The length of the non-sexual cycle is approximately 24 hours (new strain) or 30 hours (old strain). The percentage of gametocytes is around 3 in the acute period of the infection, but there is a marked increase (2–50) during relapse and sometimes during the chronic period (or period of developed infection). The rate of non-sexual reproduction of parasites (by the author's method of calculation) did not change in the acute stage, the chronic stage, or the relapse brought about by administration of adrenalin. The time and the rhythm of the non-sexual cycle were the same during relapse as during acute and chronic stages. A large percentage of merozoites perish during the acute period (=natural resistance of host). "The acquired resistance, operative at the crisis and thereafter, destroys the parasites after they are formed, but does not retard or inhibit their rate of reproduction."

A. A.

Boyd (George H.). **The Influence of Certain Experimental Factors upon the Course of Infections with** *Plasmodium praecox*.—*Amer. Jl. Hyg.* 1925. Nov. Vol. 5. No. 6. pp. 818–838. With 1 text fig. [14 refs.]

The purpose of the experiments described here was to follow in canary birds the course of laboratory infections of bird malaria (the

parasite being called *Plasmodium praecox*) and to observe how they were affected by the size of the "dose" of the parasite, or were influenced by the particular medium (whole blood, washed cells, serum) used in inoculation, and also whether the parasites were equally virulent at all stages of an infection, or were affected by rapid passage.

The size of the dose (*i.e.*, the number of parasites contained in an inoculation) was calculated, first, by determining, in stained smears of the blood of the bird to be used for inoculations, the ratio of parasites to red blood cells, and then by making an erythrocyte count of a normal saline dilution of the blood of that bird; and from these data making the necessary calculation for any given dose of the dilution. Inoculations of doses calculated to contain small numbers of parasites (1,000 or less) produced infections in only a small number of cases. Inoculations with calculated doses of 10,000 parasites failed in one of six cases. Inoculations calculated to contain 100,000 to 20,000,000 parasites never failed of infection.

A definite correlation was observed between the number of parasites inoculated and the length of the incubation period and the height of the infection. No significant correlation was observed between the number of parasites inoculated and the rapidity of the rise of the infection.

Inoculations of parasites in whole blood, or in cell suspensions washed free of serum, gave very similar results; but in inoculations with serum (only) from infected blood only 4 of 10 cases ever showed any parasites, and then only after a prolonged incubation period.

"The virulence of the parasites present in an infection appears to decrease to a slight extent as the infection progresses. The virulence of the parasites is increased somewhat by rapid passage from one bird to another."

A. A.

Boyd (George H.). **Therapeutic Action of Quinine Hydrochloride and Certain Quinine Derivatives in Experimental Infections with *Plasmodium praecox*.—*Amer. Jl. Hyg.*** 1926. Jan. Vol. 6. No. 1. pp. 173–195. With 9 charts in text. [6 refs.]

The questions proposed for experiment were to elicit the value in the treatment of canaries infected with *Plasmodium praecox* of quinine hydrochloride, and certain complex synthetic derivatives of quinine, and in the case of quinine hydrochloride to compare its action in infected canaries with its action in human malaria. The methods of experiment are described and the results of experiment discussed and tabulated.

Quinine chloride may be given in a comparatively large single dose without causing death, but in frequently-repeated doses it produces very severe effects, in birds. It is capable of killing the parasites *in vitro* in 20 minutes in a concentration of half a minimum lethal dose (for a bird) per 1 cc. of solution. Given to a bird in a single half-minimum lethal dose (*a*) 1 hour before an inoculation with 5,000,000 parasites it is incapable of preventing infection; and (*b*) in the early stages of infection is followed by a—usually temporary—decrease in the number of parasites; given in frequently repeated quarter-minimum lethal doses, in the early stages of infection, it is capable of holding the attack in check, although complete eradication of the parasites has not been effected. As none of the other drugs (14)

has proved so effective as quinine hydrochloride, it may be permitted to refer the reader to the original paper on this point. The response of the parasite of bird malaria and that of [benign] tertian malaria of man to quinine hydrochloride "compares very closely."

A. A.

ZIEMANN (Hans). Einige Bemerkungen zur Balantidium-coli-Infektion bei Menschen und Schimpansen. [*Balantidium coli* **Infections in Man and Chimpanzee.**] - *Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 434–448. [33 refs.] With 2 figs. on 1 plate.

This is a clinical and pathological study of 8 cases of *Balantidium coli* infection (2 in man, 6 in chimpanzees) in which the symptoms were severe. It contains a great deal of detail (and a bibliography), but nothing strikingly novel.

It is noted that infection may exist for a long time without any display of symptoms, and that this suggests that pathological phenomena depend on some contributory factor attributable to the host or to the reaction of the mucous membrane of the gut. In 2 cases (chimpanzees) parasites were found having penetrated into sound tissue, suggesting that necrosis begins in the depth and not at the surface of the gut. In the two human cases no protective substances could be found in the serum. The author's attempts to infect himself *per os* and a cat *per rectum* with the faeces of an infected chimpanzee were not successful.

For the treatment of balantidiasis in man emetine concurrently with rectal injections of solution (1 in 1,000) of quinine, followed by a course of Carlsbad salts is quickly effective. In chimpanzees Yatren either by mouth in small and slightly increasing doses or by rectal injections of a 3 per cent. solution is efficacious.

A. A.

OI. **Experimental Investigation of Balantidiasis.**—*Taiwan Igakkai Zasshi.* (*Jl. Med. Assoc. Formosa*). 1925. Oct. No. 247. English summary pp. 1–2. With 2 plates. [In Japanese. [34 refs.]]

The species of Balantidium found in pigs in Taiwan and the species found in man are identical. 36 to 92 per cent. of the Taiwan pigs examined by the author were infected, the number of infections increasing in the summer and decreasing in the winter. Only about half the pigs found infected—the site of infection being always the caecum and ascending colon—showed any pathological changes; these changes were diffuse infiltration and haemorrhages and, microscopically, cell infiltration and invasion of parasites in the submucosa, and occasionally small ulcers in the caecum and affected colon. Even the pigs that were found infected had not in all cases shown symptoms of disease. A young pig that received injections of the parasite [whether cysts or active forms is not stated] both by mouth and by rectum became infected, since, though showing no symptoms of disease, the above-described pathological changes were observed when it was slaughtered 172 days afterwards; but 6 other young pigs that received these injections either by mouth alone or by rectum alone did not become infected.

A. A.

Thomson (J. G.) & Robertson (Andrew). **Notes on the Cultivation of Certain Amoebae and Flagellates of Man, using the Technique of Boeck and Drbohlav.**—*Jl. Trop. Med. & Hyg.* 1925. Oct. 1. Vol. 28. No. 19. pp. 345–349. With 2 text figs. [6 refs.]

The authors found the cultivating of *Entamoeba histolytica* by the method of Boeck and Drbohlav to be a comparatively simple matter, and they continued one cultivation through a series of 96 transplantions, though amoebae were scanty in the earlier cultures. They also cultivated *E. coli*, *Dientamoeba fragilis*, *Endolimax nana*, and *Iodamoeba butschlii*, and (with the addition of a small quantity of sterilized human faeces to the B. & D. medium) *Trichomonas hominis*, *Chilomastix mesnili*, and *Tricercomonas intestinalis*. They describe the movements and behaviour of these organisms, verifying the fact that *E. histolytica* in cultivation ingests bacteria and commenting on a conjectured detractive effect of Blastocystis on the cultivation of this amoeba.

A. A.

Ramirez Corria (C. M.). Méthode de coloration élective des amibes dans les coupes. [**Elective Staining of Amoebae in Sections.**]—*C. R. Soc. Biol.* 1925. Oct. 30. Vol. 93. No. 30. pp. 1015–1017. With 1 text fig.

The author praises, as giving exquisite definition of every detail, the following method of staining amoebae in either celloidin or frozen sections of tissue that has been hardened either in alcohol or formol.

Wash the section in alcohol if it contain much fatty matter. Immerse for 1 to 15 minutes in a cold, watery, 3 to 8 per cent. solution of tannin. Wash in ammoniated water (1 drop in 10 cc. of water) until the sections are flexible. Immerse in a solution of 10 drops of ammoniacal oxide of silver to 10 cc. of water, until the edges of the section begin to show yellow. Wash in water. Immerse in a $\frac{1}{2}$ or $\frac{1}{4}$ per cent. cold or tepid solution of gold chloride until the appearance of a violet colour. Fix for 1 minute in a 5 per cent. solution of sodium hyposulphite. Wash in water. Counterstain with picro-indigo-carmine. After dehydration, clear in a mixture of toluol 80 and phenol and creosote each 10 parts. ["Water" throughout = distilled.]

A. A.

Adler (S.) & Theodor (O.). **A Sporozoon of *Phlebotomus papatasii*.**—*Ann. Trop. Med. & Parasit.* 1925. Sept. 30. Vol. 19. No. 3. pp. 309–313. With 12 text figs. [6 refs.]

The material here described, figured, and placed in the genus *Hepatozoon*, consisted of some ripe oocysts taken from the thorax and abdomen of a female *Phlebotomus papatasii*. These oocysts were filled with motile sporocysts each of which contained 4 to 16 sporozoites. Each individual sporozoite on escaping from the ruptured sporocyst was, although motile, enclosed in a membrane of its own from which it subsequently emerged through a longitudinal split. Sporocysts as well as free sporozoites were injected into the peritoneal cavity of two kinds of skink lizards (Gongylus and Mabuia), a gecko lizard not being at hand; but though the blood of the lizards was examined during the subsequent 5 weeks of life allowed them, and their livers and lungs

and bone marrow were searched after death, not any stage of haemogregarine was found. Material containing sporocysts and sporozoites was also inoculated into the skin of two healthy men whose blood disclosed no consequences in the course of the following 5 weeks.

A. A.

Kudo (R.). **Studies on Microsporidia parasitic in Mosquitoes. IV. Observations upon the Microsporidia found in the Mosquitoes of Georgia, U.S.A.**—*Cent. f. Bakt.* I. Abt. Orig. 1925. Nov. 25. Vol. 96. No. 7-8. pp. 428–440. With 86 figs. on 2 plates. [7 refs.]

The author describes species of Thelohania found infecting larvae (and exceptionally adults) of Anopheles and Culex, and a Nosema infecting Anopheles larvae in Georgia, U.S.A.

A. A.

i. Patton (W. S.). **Diptera of Medical and Veterinary Importance. I. Types of Older Authors in Continental Museums.**—*Philippine Jl. Sci.* 1925. June. Vol. 27. No. 2. pp. 177–200.

ii. ——. **II. The More Important Blowflies, Calliphorinae.** *Ibid.* July. Vol. 27. No. 3. pp. 397–411. [2 refs.]

i. In its way—which is an arduous way, dry and dusty and wholly unattractive to any but the systematist—this is a very interesting paper. The author has been examining the actual specific types of Diptera preserved in the principal museums of continental Europe, and he gives here some account of what he has seen and thought of them. His discovery that a dipterist of such eminence as Wiedemann did in the course of his work describe one kind of Musca under five different specific names, and his statement that the collection of the famous Fabricius at Kiel does not—so far as it remains—contain a single specimen of *Musca domestica* of Linneus, labelled as such, should help the most austere entomologist to realize how human and how pardonable rather than how disgraceful and punishable it is to err and waver in little matters of opinion. His statement that the blood-sucking Muscids known as "Bdellolarynx" may be included in the generic concept of Haematobia is of pertinent interest here.

ii. A continuation of the above, and dealing with blow-flies and screw-worm flies.

A. A.

Franchini (Giuseppe). Brevi note di entomologia sulla Somalia e sulla Eritrea. **Entomology of Italian Somaliland and Eritrea.**]—*Pathologica.* 1925. Sept. 15. Vol. 17. No. 404. pp. 494–495.

It is the aim of the author to compile an "entomological monograph" for various colonies, and in the present paper he enumerates some of the specimens already identified in Somalia: *Anopheles claviger*, *Aëdes argenteus*, *Theobaldia longiareolata* and *T. annulata*, *Glossina pallidipes*, various species of Cheironomidae and Simuliidae, *Phlebotomus papatasii* and *P. minutus*, *Hyalomma aegyptium*, *Amblyomma* and *Haemaphysalis*, *Argas persicus*, *Ornithodorus moubata* and *O. savigni*.

In Eritrea: Many Culicidae, among them *Aëdes argenteus*, *Theobaldia longiareolata*, Cheironomidae (*palustris* and *venustus*) and *Culex pipiens*.

H. Harold Scott.

Núñez Tovar (Manuel). Indice dipterologico de Venezuela. [**Dipterological Index of Venezuela.**]—*Gac. Méd. de Caracas.* 1925. Aug. 31. Vol. 32. No. 16. pp. 250–253.

A list of flies [apparently restricted to species that are presumed to suck blood] that occur in Venezuela. It contains the names of 116 species, of which 9 are Anopheles and 63 Culicidae of other species, 5 are Phlebotomus, 36 Tabanidae, and 3 Muscidae.

A. A.

Patton (W. S.) & MacGill (E.). **Comparative Studies of the Antennae of some of the Higher Diptera.**—*Indian Jl. Med. Res.* 1925. Oct. Vol. 13. No. 2. pp. 275–285. With 67 figs. on 7 plates.

In this paper the distribution of the sensory pits and pockets of well-known occurrence in the third antennal segment of Muscoid flies are described and roughly figured for a considerable number of species of Muscidae. The interesting histology of these organs is not dealt with, nor are any references given to previous work on this subject.

A. A.

Kirkpatrick (T. W.). **The Mosquitoes of Egypt.**—pp. xi+224. With 33 plates & 2 folding maps. Egyptian Govt. Antimalarial Commission. 1925. Cairo.

This is a very fine and complete study of the 22 species of mosquitoes —6 Anopheles, 1 Uranotoenia, 1 Theobaldia, 3 Aedes, and 11 Culex— known to inhabit Egypt. Each species is described in the male form (and genitalia), in the female form, and in the full-grown larva and the pupa stages, and in the plates the male genitalia and the principal specific characters of the larvae and pupae are figured. There is a good introduction to the study of mosquitoes, in which the structural details of the adults and of the larva and pupa are described with illustrative figures. There is also a good section on the Natural History—what is now called Oecology and Biology—of mosquitoes. Then, after a chapter on the physiography, hydrography, and climate of Egypt, the distribution, seasonal prevalence, and other details of the oecology and biology of the 22 Egyptian species are considered.

The material on which this very comprehensive study is based was obtained in a survey, extending from February 1st to November 30th, chiefly of the Nile Valley and Delta, but also including some oases and waterholes and wells of the desert.

A. A.

Edwards (F. W.) & James (S. P.). **British Mosquitoes and their Control.**—*British Museum (Nat. Hist.). Economic Series.* No. 4a. 27 pp. With 4 text figs. 1925. London: Printed by Order of the Trustees of the British Museum. [Price Sixpence.]

This useful publication consists of two sections, one dealing systematically with the insects themselves, the other with their control. The systematic part contains a "key," generic definitions, short and easy specific diagnoses, and statements of the habits and distribution of individual species; from all these particulars most of the British species—certainly all those of common occurrence—can be identified. If, as may be assumed, this part is intended to help the amateur rather than the expert, it must be regarded as a defect that it does

not provide a definition of mosquitoes as a family, since it is a matter of everyday experience that people whom one expects to have more sense mistake some very common insects—e.g., some Chironomids and small Tipulids, and, above all things, the common *Rhyphus fenestralis*—for mosquitoes. The section dealing with the control of mosquitoes is particularly good—alike in conception, in firm enunciation of principles, in exact and discriminative application of principles to practice, and in clear and convincing exposition.

A. A.

i. Brumpt (E.). Capture des larves de Culicidés par les plantes du genre *Utricularia*. [**Capture of Culicid Larvae by Utricularia.**]—*Ann. Parasit. Humaine et Comparée.* 1925. Oct. Vol. 3. No. 4. pp. 403–411. With 3 text figs. [14 refs.]

ii. Langeron (M.). Biologie et écologie des utriculaires dans leurs rapports avec la prophylaxie du paludisme. [**Utricularia and the Prevention of Malaria.**]—*Ibid.* pp. 412–425. With 4 text figs. [14 refs.]

These two papers are complementary in their purpose, which is to uphold the practical efficiency of Utricularia against the malarial mosquito.

i. The author relates his personal observations of the results of loosing mosquito larvae in vessels of water in which some *Utricularia vulgaris* was floating. The larvae were very soon found trapped within the bladders of the plant; of about 100 young Anopheles larvae loosed in one experiment nearly 50 were thus imprisoned in less than 3 hours, most of the bladders in one particularly attractive branch containing from 1 to 5 larvae each. He also gives an interesting summary of observations of the trapping of small aquatic animals by Utricularia, published by previous authors from 1875 onwards; in some of them Culicid larvae are mentioned among the prey.

ii. This paper contains an interesting sketch of the Utricularias—small herbs, found in all parts of the globe, growing in humid soil, or aquatic—and a description of the bladders in which they capture their small prey. The rootless aquatic species, which float on the surface of the water, must be one of Nature's curbs on Anopheles larvae, and the author considers that in the strife against Anopheles "no means, howsoever apparently feeble, should be ignored." A list of these expectative aquatic species of Utricularia is given with the geographical distribution of each.

A. A.

Orishita (Kaoru). **Experimental Observations on the Habits of *Culex quinquefasciatus* Say, with Special Reference to the Influence of Hydrogen-Ion Concentration upon its Development.** —*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa*). 1925. Sept. No. 246. English summary pp. 1–3. [In Japanese.]

The novel points in these observations of *Culex fatigans* appear to be as follows: Eggs when dried retain their vitality unimpaired for 3 days, but are quite dead after 5 days. Eggs withstand temperatures as low as 2° to —2° C. for one day; at the other extreme they died [in the author's experiments] when the temperature of the water reached 40° C. Eggs hatch equally well in a pH range of 2 to 9·8.

but the young larvae soon die in a pH 2 concentration. Larvae, if food be present, develop equally well in a pH range of 5·3 to 9·4; and pupae hatch equally well in a range of 3·2 and 9·8. The pupal stage is much prolonged even at a temperature of 9° C.

A. A.

BRUMPT (E.). Ponte et résistance des oeufs de l'*Anopheles maculipennis*. [**The Egg Laying and Egg Resistance of** *A. maculipennis*.] —*Ann. Parasit. Humaine et Comparée*. 1925. Oct. Vol. 3. No. 4. pp. 396–402. With 3 text figs. [8 refs.]

The author has observed *Anopheles maculipennis* in the very act of parturition (in the evening at 6.20 summer time). The insect first posed herself upon the water, with *only* the first pair of legs resting on the vessel containing the water, the other legs resting on the water, the abdomen extended parallel with the water, and the tip of the abdomen slightly *upcurved*. In this position the eggs (to the number of 90 in this particular case) fell upon the water. Fresh-dropped eggs on absorbent paper could be kept dry for 48 hours, at a temperature of 12°–15° C., without detriment to life; and for 72 hours in a moist atmosphere, at the same temperature. Eggs taken from the water after embryonic development had progressed and then kept on absorbent paper in a moist atmosphere, at the same temperature, might in some instances hatch after as much as 5 days when returned to water.

Incidentally, the author confirms the observation that in these latitudes *A. maculipennis* does not hibernate in the strict sense of the term; since females, when the winter temperature is favourable, may be found full of blood. Incidentally also he confirms the observation that although *A. maculipennis* is attracted to domestic animals and their environment rather than to man, its voracity for man can be demonstrated readily enough even when it is brought from a stable or cattleshed.

A. A.

i. STRICKLAND (C. **The Mosquito Factor in the Malaria of Assam Tea Gardens.**—*Indian Med. Gaz.* 1925. Nov. Vol. 60. No. 11. pp. 514–524. With 15 text figs. [9 refs.]

ii. COLAS-BELCOUR (J.). Sur les anophélines en Basse-Normandie. **The Anophelines of Basse-Normandie.** *Bull. Soc. Path. Exot.* 1925 Oct. 14. Vol. 18. No. 8. pp. 659–660. [7 refs.]

iii. SWELLENGREBEL (N. H.). *Cellia errabunda* n. sp., een nieuwe anopheline voor Nederlandsch-Indië. [**A New Anopheline from D.E.I.** *Nederl. Tijdschr. v. Geneesk.* 1925. Apr. 25. 69th Year. 1st Half. No. 17. pp. 1913–1915. With 5 text figs.

iv. PETROCHI (Juana). Descripción de un nuevo *Anopheles*. [**A New Anopheles.**]—*Rev. Inst. Bacteriol.* Buenos Aires. 1925. Mar. Vol. 4. No. 1. pp. 69–75. With 5 text figs. [1 ref.]

v. KŌ KAN. **On the Predilection for Colours by Mosquitoes.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. Formosa*). 1925. July. No. 244. English summary pp. 2–3. [In Japanese.]

vi. ANNALS OF TROPICAL MEDICINE AND PARASITOLOGY. 1925. Dec. 16. Vol. 19. No. 4. p. 466.—**The Predaceous Habit of the Larvae** *Mucidus scaraphoides*. [Miscellanea.]

i. The essentials of this paper have already been noticed (Vol. 22. p. 899). The present re-publication includes some questions of policy an

general interest and also provides some very useful illustrations of breeding-grounds of Anopheles.

ii. The three common species, *A. maculipennis*, *A. bifurcatus*, and *A. plumbeus*.

iii. Description of a new species of Anopheles from Borneo closely resembling the tropical American *A. argyrotarsis*. Four specimens were caught.

iv. The species here described (with some figured detail) as *Anopheles bachmanni*, from Argentina, is most nearly related to *A. argyrotarsis* and *tarsimaculatus*.

v. In 14,285 observations of Culex—mostly *C. quinquefasciatus*—blue, purple, red, and black were preferred, as a resting surface, to yellow, white, deep-red, and green.

vi. The larvae of this species were observed by Dr. F. A. Innes to devour larvae of other species of mosquitoes supplied to them.

A. A.

Hargreaves (H.). **Ann. Rep. of the Govt. Entomologist.**—*Uganda Protectorate Ann. Rep. Dept. of Agric. for Year ended 31st Dec., 1924.* pp. 21–28.

A great pest in E. Busoga is the *embwa* fly, *Simulium damnosum*. It breeds in rocky rapids of the Nile, attacks man freely, travelling far for this end, and is stated to be largely responsible for the sparsity of the local population. Damming the Nile is hardly an undertaking for the entomologist. Fortunately, the fly usually does not attack at a level more than three feet above the ground, so that protection of the feet and legs gives security. In the case of bare legs, smearing with almost any oil or grease, either alone or in emulsification with creosote or tar, gives adequate protection; kerosene-naphthaline emulsion, however, was ineffective; an efficient material, which also has the advantages of cheapness and of being locally produced, is "cottonseed tar."

A. A.

Johnston (T. Harvey). **Remarks on the Commoner "Bush-flies" of Australia.**—*Health.* 1925. July. Vol. 3. No. 4. pp. 110–113.

The commonest "bushflies" of Australia are here stated to be *Musca vetustissima* and *M. fergusoni*. Both, but particularly the former, are present in towns as well as in the bush, in Australia. They are most persistent pests, and are attracted to wounds and sores; "they are almost certainly the main vectors of trachoma in the Commonwealth"; they are also fond of human faeces, and for that reason would be as dangerous as the ordinary house fly if—as they are not—they were greatly addicted to haunting houses. So far as is known from limited study, *M. vetustissima* lays 20 to 40 eggs in fresh cow (sometimes horse) dung, and the egg and larva stage together occupy 4 to 6 days, in spring, and the pupa stage 6 or 7 days. *M. fergusoni* is larviparous, producing a single maggot at a time, in the 2nd instar, which is deposited preferably in fresh cowdung; the larva stage is "much abbreviated," and the pupa stage takes from a week to a month.

A. A.

YORKE (Warrington). **Co-ordination of Effort in Tsetse-Fly Investigations.**—*Ann. Trop. Med. & Hyg.* 1925. Sept. 30. Vol. 19. No. 3. pp. 373–379.

This paper advocates the co-ordination of all studies in the field of trypanosomiasis under central direction, to ensure, at the least, the unanimity and the purposeful continuity which at present cannot be said to exist. [In agreeing with the author one may be permitted to express the opinion that "co-ordination" without central control is a misleading metaphor.]

A. A.

SOCIETY FOR THE PRESERVATION OF THE FAUNA OF THE EMPIRE. London. 1925. Oct. **The Tsetse-Fly Problem and its Solution. Occasional Papers No. 1.**—10 pp. With 1 map.

There is nothing new in this pamphlet in which the argument for and against the control of tsetse-fly by indiscriminate destruction of game is examined. The insufficiency of the evidence in support of the positive statements that the absence of game, or the destruction of game—whether by man or by natural causes—has in some particular instance been followed by disappearance of tsetse-fly is emphasized. The difficulties and embarrassments and expense of endeavouring to exterminate game are described, as well as the possible danger of scattering the fly into new territory, and the admitted danger of diverting the fly to man, by destroying its established sources of food. The natural and economic value of big game is exemplified, as well as its permanent scientific interest.

More promising methods of dealing with tsetse-fly are outlined. The population may be organized to cut back the bush that shelters the fly, from their settlements, or to deprive the fly of shelter by periodical bush fires, properly timed and carefully planned, or to check its spread by broad belts of arable land, suiting the method to the particular circumstances of the locality.

A. A.

SYMES (C. B.). **Tsetse Fly Control in Kenya.**—*Kenya Med. Jl.* 1925. Oct. Vol. 2. No. 7. pp. 191–205.

The chief areas of tsetse-fly infestation near the Victoria Lake in Kenya were determined by Dr. J. O. BEVEN in 1921. Intensive investigations are now in progress in three areas in the district of Karachonya in S. Kavirondo. Karachonya is on the Lake shore, where three fairly large rivers discharge into the lake; its population, which is still relatively dense, notwithstanding the ravages of sleeping-sickness, is pastoral (cattle and goats), and agricultural (maize), but its standards are low; the people seem to possess a considerable degree of immunity to trypanosomiasis. Besides the dangerous *Glossina palpalis*, *G. brevipalpis* exists there. Measures of control have been started in Miriu, and, if they prove successful, will be adopted elsewhere. The most promising measure appears to be clearing and stumping of bush and settling the reclaimed land for continuous pasture and agriculture; also clearing the bush in the neighbourhood of watering-places and fords. The nature of the jungle does not lend itself to grass-fires. There is some difficulty about labour for clearing, owing to the indifference and even the opposition

of the people. For the protection of the labourers, work is stopped during the hours—7.30 or 8 a.m. to 4.30 p.m.—when the fly is active ; smoke-screens also are useful. Attention is directed to the cultivation of bananas and papaws, also to the policy of offering special inducements to permanent settlers in the cleared bush, to the growing of economically valuable timber, to the necessity of drainage, and to the direction of traffic into routes kept free of fly.

A. A.

GOLD COAST. **Third Report on Tsetse Fly Conditions in the Gold Coast. (Secretary of State's Despatch No. 630 1923.) 3rd August to 28th August.** [YOUNG (W. A.), Director, Med. Res. Inst., Accra. —6 pp. Foot. Unpublished Report enclosed in Despatch No. 692 dated 28th Sept., 1925, from the Acting Governor of the Gold Coast to the Secretary of State. Received from the Colonial Office, Jan. 8, 1926.]

This is the report of a tour, completed between the 3rd and 28th August 1925, in the sparsely populated country between Kintampo and Bole watered by the Volta river. At that time the weather was dull and cool, and the river was filling, owing to frequent and heavy storms of rain ; the trees were in leaf and the grass was flourishing (2 to 6 feet high), big game was plentiful, and tsetse fly were abundant and particularly active at certain places along the river, a definite " belt " of *morsitans* being obvious in the vicinity of Wasipe, and another of *longipalpis* between Kintampo and Kumasi. The species encountered besides those two were *G. palpalis*, *tachinoides*, and *fusca*. The last-named, as well as *longipalpis*, were detected biting long after nightfall, and the author makes the general statement that tsetse-fly will bite at any hour if the vegetation in which they are resting be disturbed. It is noteworthy that breeding-grounds of *tachinoides* which had been found well-stocked with pupae in the month of December were at this time quite barren. Some suspicious cases of sickness were observed, but trypanosomes were found in only one case. A fair percentage—16 and 12 per cent. respectively—of the flies dissected was found infected with trypanosomes of the *congolense* and *vivax* groups.

The results of this August tour show that in the north-western part of the Gold Coast the intensity of " fly " varies enormously through the year, and the author offers the vagaries of the Volta river as a possible explanation of the fact that tsetse flies have not run riot in the Province. In February-March the river is at its lowest, shade is deficient, and grass is dried up or actually burnt. After March the river rises and falls fitfully till June, when local tornadoes may raise it several feet within a few hours, to fall again. In the course of August it will rise, by sudden mounts, as much as 32 feet, and flood the land for a mile on either side. By December it has returned to its early August state ; the floods have dried, leaving in the vicinity of the river a sandy soil which, in places where shade is present, is suitable for pupae. The months just before and just after December (October-January) appear, therefore, to afford those favourable conditions for pupation which, at other times of the year, are made precarious by the caprices of the river.

A. A.

Gaudet (Lucien S.). **Removal of Sixty-two Screw Worms from the Soft Palate.**—*Southern Med. Jl.* 1925. Nov. Vol. 18. No. 11. pp. 824–825.

The author comments on the abnormal frequency of infestation with screwworms in the rural districts within his experience. The patient in this case, a youth of 18, remembered having gone to sleep in the porch after dinner a few days before his sufferings began. When seen he complained of intense pain and of difficulty in swallowing; he had fever (100·4° F.) and a foetid ozoena; the soft palate was found to be swollen and perforated, the perforation filled with writhing maggots, of which 20 were removed at once. A pack carrying cocain solution was inserted for a few minutes, and then a pack well impregnated with chloroform, while maggots were removed in their attempts to escape. Maggots were removed during the next two days following, and the patient was discharged 6 days afterwards. The total number of maggots removed was 62.

A. A.

Franchini (Giuseppe). Myiasi nasale e myiasi gastro-intestinale. [**Nasal and Intestinal Myiasis.**—*Riforma Med.* 1925. Aug. 24. Vol. 41. No. 34. pp. 795–796.

A discursive account from Bologna of a girl of 7 years suffering from rhinitis, with headache, nervous symptoms, and cough, followed by gastro-intestinal pain, vomiting, and passage of muco-sanguineous stools which were found to contain numerous small maggots of an "Anthomyia" [probably Fannia]. Similar maggots had been noticed in the muco-purulent discharge from the nose. The case seems to have been treated happily with santonin.

A. A.

Herms (W. B.). **Ophthalmomyiasis in Man due to** *Cephalomyia* (*Oestrus*) *ovis* (Linn.).—*Jl. Parasit.* 1925. Sept. Vol. 12. No. 1. pp. 54–56. With 1 text fig. [4 refs.]

This case occurred in Honolulu. The sufferer was a labourer in a chemical warehouse, and nothing is known whether or not he had any other occupation with sheep, goats, etc. Three small (about 1 millim.) larvae were found extremely adherent to the conjunctiva, which was inflamed and ulcerated; they were identified by the author as *Oestrus ovis*. The author gives a brief account of the appearance and habits of the fly, which deposits its larvae on the wing, by striking the eye or nostril of the victim, and he also refers to published cases of phthalmomyiasis in man, and gives a figure of the first-stage larva of *Oestrus ovis*.

A. A.

Yamasaki (S.). **On Myiasis interna.**—*Taiwan Igakkai Zasshi* (*Jl. Formosan Med. Soc.*). 1925. Sept. No. 246. English summary p. 5. [In Japanese.]

In the faeces of a young man under treatment for ankylostomiasis 45 maggots of a fly were found. The patient was therefore instructed to evacuate into a pot and to bring the evacuation, carefully protected and

quickly, for examination. In this material 15 maggots were found and were bred out and identified as Sarcophaga. Thereafter the patient's symptoms disappeared, although eggs of ancylostoma were still being passed.

A. A.

Jewett (M. L.). **Case of Larvae of Fly in Tympanum.**—*Canadian Med. Assoc. Jl.* 1925. Oct. Vol. 15. No. 10. pp. 1053–1054.

The man in this case had a bloody discharge from the ear and complained of tinnitus and intense irritation of 5 days' duration. A maggot was removed from the depth of the external meatus and through a small opening in the membrane another was observed in the tympanum. On instilling 2 minims of chloroform into the perforation in the membrane the second maggot, which had been indifferent to other treatment, came forth into the meatus whence it was removed easily.

A. A.

Séguy (E.). Etude sur quelques muscides exotiques à larves parasites. **Exotic Muscidae with Parasitic Larvae.**—*Bull. Soc. Path. Exot.* 1925. Nov.11. Vol. 18. No. 9. pp. 732–735.

This paper contains the diagnosis of a new genus of blowflies—*Roubaudiella*—and a key for distinguishing 18 genera of these flies (Calliphorinae). Séguy calls them all exotic flies having parasitic larvae; but, since Calliphora and Lucilia are among them, his definition of the term parasite must be an extremely broad one.

A. A.

Girard (G.) & Legendre (F.). Premières observations sur les puces de rat des régions pesteuses de Madagascar. [**Rat Fleas of Plague Regions of Madagascar.**—*Bull. Soc. Path. Exot.* 1925. Nov. 11. Vol. 18. No. 9. pp. 730–731.

At Tananarive, where (at an elevation about 4,000 ft.) there is a distinct alternation of seasons between hot-and-damp and cold-and-dry, as at Tamatave, where it is perennially hot and damp, *Xenopsylla cheopis* is the predominant rat-flea. The other rat-fleas found at Tananarive were *Ctenopsylla musculi* (25 per cent. of 1,675 examined), and *Echidnophaga gallinacea* (15 per cent.), and at Tamatave *E. gallinacea*. All the rats at Tananarive were *Mus rattus* var. *alexandrinus*.

A. A.

Pawlowsky (E. N.) & Stein (A. K.). Experimentelle Untersuchungen ueber die Wirkung der Flöhe auf den Menschen. [**Flea-Bites: Experimental.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Aug. 1. Vol. 29. No. 8. pp. 387–400. With 4 text figs. [4 refs.]

This is about the action of the saliva of the flea, which is compared with that of the bloodsucking lice of man. The flea's saliva (dog-flea and man-flea) merely causes roseola and "purpura pulicosa" with slight local hyperaemia.

A. A.

Odaka (Yoshiwo). [**On the Flea Killing Power and other Vermicidal Power of Carbon Tetraoxyd.**]—*Iji Shimbun* (*Med. News*). 1925. May. No. 1164. [Summarized in *Japan Med. World.* 1925. July 15. Vol. 5. No. 7. pp. 183–184.]

It is here asserted that "the combined preparation of carbon tetrachlorid and carbon tetrachlorid-cresol soap solution has been found to be one of the best flea exterminators hitherto known."

A. A.

de Bergevin (Ernest). Les hémipteres suceurs de sang. Espèces se révélant occasionellement suceuses de sang humain. Description d'une nouvelle espèce d'Athysanus (Hémiptère-Homoptére) suceuse de sang humain de l'Extrême-Sud algérien. [**Occasional Bug Blood Suckers. A New Species of Athysanus sucking Human Blood in South Algeria.**—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 28–44. With 9 text figs. [5 refs.]

This is an annotated list, with some beautiful figures, of some bugs that have been known to bite people. Besides the parasitic Cimicidae and Polyctendidae and the predaceous Reduviidae, the following are here noticed: of the family Lygaeidae, *Leptodemus minutus* and *Geocoris henoni* and *G. scutellaris*; of the family Capsidae, *Brachynotocoris puncticornis*; of the family Jassidae, *Athysanus vulnerans*, *Thamotettyx* 3 sp., and *Deltocephalus* sp. This is by no means an exhaustive list of bugs that may chance to bite people.

A. A.

Hindle (Edward) & Duncan (J. T.). **The Viability of Bacteria in *Argas persicus*.**—*Parasitology.* 1925. Oct. Vol. 17. No. 4. pp. 434–446. With 3 figs. on 1 plate & 2 text figs. [7 refs.].

A well-devised and interesting series of experiments, suggested by the fact that the alimentary tract of the tick is consistently free from bacteria although ticks must often imbibe infected blood, is here recorded. The tick chosen for them is *Argas persicus*, as being a manageable tick, feeding to repletion fairly quickly. The authors let the ticks bite and feed through animal membrane tautly covering suspensions of various bacteria in normal inactivated horse-serum, the ticks first being deprived of any discretion in the matter by the removal of the tarsus of the first pair of legs where their gustatory guidance is seated (Haller's organ). This is a ruse originally devised by Hindle and Merriman, and its adaptation to the present investigation is here described fully and figured, along with all other details of technique and facilities of procedure.

The authors find that *Bacillus anthrax*, *Streptococcus faecalis*, and *B. subtilis* can survive—the first two "indefinitely"—in the tick's stomach, and are passed in its faeces. For, although the contents of the stomach, tested *in vitro*, are bactericidal, some bacilli (or spores in the case of anthrax) can survive a heavy infection, and, as a matter of fact, a fully virulent culture of anthrax was obtained from faeces passed on the hundredth day. (*B. mycoides*, though a spore-bearer, did not survive long or appear in the faeces). *B. subtilis* seemed to behave like anthrax. *S. faecalis* was entirely resistant to the bactericidal and inhibitory influences of the stomach.

B. typhosus survived in the stomach for at least 22 days, but was never recovered from the faeces—a problem for future solution, since no bactericidal or inhibitory principles were discovered in the tick.

Staphylococcus aureus died out very quickly, the stomach contents being powerfully lethal to it, *in vitro*.

(Tests with *B. pestis* and *melitensis* were inconclusive, as both died out quickly in the horse-serum used in feeding.)

In all cases the micro-organisms tested remained within the alimentary tract, not reaching the coelom, and defaecation was the only process of removal from the tick; and since defaecation occurs only at long intervals, and not while feeding, it seems unlikely that *Argas persicus*, at any rate, can be an effective carrier of any of the organisms tested.

The bactericidal principle was found in not one of the various suspensions of tissues investigated, and only in one doubtful instance in the coelom. It and the inhibitory principle are still under investigation; it is clear, at present, that they are not in the horse-serum used in feeding, and are independent of an alexin.

A. A.

Juillet (A.) & Diacono (H.). Essai de destruction du pou de corps ou de vêtements "Pediculus corporis" de Geer par les émulsions savonneuses d'oléo-résine de pyrèthre de Dalmatie (chrysanthème insecticide). [**Destruction of the Body Louse by Soapy Emulsions of Oleoresin of Pyrethrum.**]—Reprinted from *Bull. des Sci. Pharmacologiques*. 1925. July & Aug.–Sept. Vol. 32. 32 pp. [52 refs.] Also published as Notice No. 20 of the Office Nat. des Matières Premières végétales pour la Droguerie et la Parfumerie. 12, Avenue du Maine, Paris XV.

Dalmatian powder (pulverized capitula of *Pyrethrum cinerarifolium*) having lately suffered some disparagement as a pedicide, the authors have investigated its insecticidal properties—and particularly its action upon both Pediculus and Phthirius—in the form of an extract. They here describe the result of their operations, at full length and in the minutest detail—the toxicity of the powder, the active principle and the methods of its extraction (preferably with ethylene trichloride), the manufacture of a potash soap and the effects upon lice of an alkaline emulsion of this *savon pyréthre*. In the optimum dilution, which appears to be 20 per cent., this soap is mortal to lice in 20 minutes.

A. A.

Braun (L. I. B.). **Notes on Desensitization of a Patient Hypersensitive to Bee Stings.**—*S. African Med. Rec.* 1925. Sept. 26. Vol. 23. No. 18. pp. 408–409.

An extreme case of idiosyncrasy to bee-venom in a woman of 32 years who appeared normal in every other way. Prior to the author's observations, here recorded, she had, in the course of 9 years, been stung on seven occasions, and in each instance by a single bee, and on each occasion the agony and terror had been worse than before.

Within 30 seconds or a minute of being stung, symptoms begin—a hot flush all over the body, pains as of travail, and an agonized sensation of impending suffocation, then a general trembling, followed

by a comatoid stage, which may last 3 or 4 days. Objectively, the tips of the digits are livid, and wheals spread from the site of the sting all over the body so as to cause a general superficial swelling.

The author describes his attempts to "desensitize" the patient, who lives in a district of wild bees. A course of peptone and intravenous injections of calcium was found by experiment to be of no effect; but immunization by the ordinary method—in this case applying first diluted bee-venom and then the actual venom, in gradually increasing doses, to the abraded skin—was so successful that even at the end of two weeks the patient could tolerate 1·5 cc. of venom so applied. She then heroically suffered herself to be stung by a bee, and after a delay of 10 minutes showed an "extremely mild" reaction.

A. A.

Stern (E.). Schwere Schockerscheinungen nach Wespenstichen. [**Severe Symptoms of Shock after Wasp Stings.**]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Sept. 1. Vol. 29. No. 9. pp. 450–452. [2 refs.]

Brief notes from Tiberias (Palestine) of two very serious cases of shock passing into semicoma or even actual coma, following wasp-sting. In one, a young man was stung about the head and neck and hands and feet by a swarm of wasps; in the other, an elderly woman was stung in the hand by a single wasp. In the later case (anaphylaxis) the symptoms were the more serious, and included deep and general cyanosis. Both cases were treated with camphor and caffein and with 20 cc. of Calmette's polyvalent antivenomous serum; in the first case recovery was rapid, but in the second case (which also received 1 cc. of a 1 in 1,000 solution of adrenalin) recovery was protracted.

A. A.

Wada (Hiratake). Klinische und experimentelle Untersuchung ueber die durch Giftraupe, *Dendrolimus spectabilis* verursachte Dermatitis und ihre Ursache. (I. Mitteilung). [**Investigation of the Dermatitis caused by the Caterpillar** *D. spectabilis* **and its Cause.**]—*Japan. Jl. Dermat. & Urol.* 1925. Aug. Vol. 25. No. 8. German summary pp. 91–92. [In Japanese pp. 646–679. 42 refs.]

The dermatitis caused by the nettle-hairs of the lepidopterous caterpillar *Dendrolimus spectabilis* is an ardently itching nettlerash, lasting as such for a few hours, or perhaps a day, but not fading entirely for a week or two. The hairs, which stand in tufts on the dorsum of the first two segments of the body, are finely barbed and are hollow throughout; each has at its base 2 large, often multinucleate cells, the protoplasm of which extends into the hollow shaft of the hair. A watery, or saline, or glycerine extract of these hairs can produce a slight dermatitis; but an extract in alcohol, or ether, or benzol, or chloroform can cause an unmitigated inflammation. The author's conclusion that the dermatitis caused by the hairs of the caterpillar is essentially toxic and not merely mechanical thus appears to be established.

A. A.

Mills (P. S.). **Interesting Effect of an Insect Bite.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. p. 473.

Case of an Indian Mahomedan boy of 11 years stated to have been bitten in the foot by a sort of dung-beetle known in the vernacular as *chharbinda*. The bite caused burning pain throughout the leg and lasting for a few hours; but the more extraordinary effect was a priapism of astounding intensity and persistence. It lasted for about five days after the commencement of treatment in hospital, and is stated to have begun at the time of the bite, about five days before admission. There was nothing abnormal in the urine, though micturition was painfully difficult.

A. A.

Cowdry (E. V.). **The Occurrence of *Rickettsia*-like Microörganisms in Adult "Locusts"** (*Tibicen septendecim* **Linn.**).—Reprinted from *Biol. Bull.* 1925. Jan. Vol. 48. No. 1. pp. 15–18. With 1 plate.

The Rickettsia-like "microorganisms" were found in sporadic masses in the lumen of the alimentary canal and Malphighian tubules, seldom within cells; none was detected in the ovaries.

A. A.

Hellwig (Ferdinand C.). **Arachnid Infection in Monkeys** (*Pneumonyssus Foxi* **of Weidman**).—*Amer. Jl. Path.* 1925. July. Vol. 1. No. 4. (Whole No. 4.) pp. 389–395. With 7 figs. on 2 plates. [17 refs.]

In the routine of work 6 monkey cadavers in a batch of 9 were found to have pulmonary lesions suggestive of tuberculosis; 3 of the 6 had no other lesions of any sort. The lesions were small superficial cysts having a thick wall of granulation tissue, and part filled with yellowish débris. Each lung contained from 20 to 40 of them. On macerating the débris in caustic potash solution it was found to contain little mites of the species *Pneumonyssus foxi*—a well-known parasite of the lung of monkeys. In some of the cysts as many as 20 mites were found. The 3 monkeys in which no other lesions were observed than these superficial pulmonary cysts had, during life, been subject to very frequent paroxysms of coughing and sneezing.

The author takes occasion to refer to numerous and varied cases of acariasis of the viscera in man—some of which are undoubtedly authentic.

A. A.

Mirtl (Carl). Mehlmilben (*Tyroglyphus farinae*) als pathogene Schmarotzer beim Menschen? [**Mealmites as Pathogenic Parasites of Man.**]—*Muench. Med. Woch.* 1925. Sept. 18. Vol. 72. No. 38. p. 1598.

In cases of disorders of the di estive and urinary organs (altogether 42 in number) investigated in the course of five weeks, mites (*Aleurobius farinae*) were found in the urinary sediment in 10 instances, the urine not having been drawn by catheter. The author seems to incline to the opinion that, since food-mites can get into the human intestine and cause trouble there [on which point there can be little doubt], it is not unreasonable to suppose that they may find their way into the urinary bladder and cause irritation there [Cf. this *Bulletin*, Vol. 20, p. 473, and Vol. 21, p. 156, and on the other side of the question Vol. 21, p. 155].

A. A.

Wertheimer (Joseph). Ueber Milbenbefunde im Stuhle. [**The Discovery of Mites in Stools.**]—*Muench. Med. Woch.* 1925. Nov. 6. Vol. 72. No. 45. pp. 1920–1921.

The author's sole experience in one case has taught him the very plain and simple lesson that the mere finding of *dead* mites in a stool from a patient having dysenteric symptoms is, by itself, no proof that mites are a cause of dysentery.

A. A.

Kimura (Tetsuji), Suda (Hideji) & Kishida (Kyukichi). **On the Mites (Acarina) found in Urine of the Japanese.**—*Sei-I-Kwai Med. Jl.* 1924. Oct. Vol. 43. No. 5. (Whole No. 477). English summary p. 12. [In Japanese.] [Also summarized in *Japan Med. World.* 1925. Mar. 15. Vol. 5. No. 3. pp. 74–75.]

During 10 days' observation of the urine of a case of chronic nephritis the authors found 12 specimens of adult mites, which were referred to 3 species—*Tarsonemus latissimus* and *Tyroglyphus longior* and *ovatus*. [In the absence of other desirable detail, compare this *Bulletin*, Vol. 21, p. 155.]

A. A.

Hirst (Stanley). **On a Harvest Bug (*Leeuwenhoekia australiensis*, sp. n.) attacking Human Beings at Sydney, New South Wales.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. June 18. Vol. 19. No. 3. pp. 150–152. With 3 text figs.

The habits of this harvest-mite and their effects upon human beings are very much the same as those of British harvest-mite. The creatures are said to be active throughout the Australian summer—October till April.

A. A.

i. Hieronymi (E.). Ueber Milbenbefunde im Stuhl. **Discovery of Mites in the Faeces.**]—*Muench. Med. Woch.* 1925. Dec. 11. Vol. 72. No. 50. p. 2157.

ii. Harada (Sadaji). [**On a Case of Tick found in Human Urine.**]—*Chugai Iji Shimpo* (*Central Med. Jl.*). 1925. July. Vol. 44. No. 14. [Summarized in *Japan Med. World.* 1925. Sept. 15. Vol. 5. No. 9. pp. 251–252.]

iii. Seydel (Ch.). Les tiques. **Ticks of the Congo.**]—*Bull. Méd. du Katanga.* 1925. Aug. Vol. 2. No. 4. pp. 161–164.

iv. Johnston (H. B.). '*Heliothrips indicus* (**Bagnall**) injurious to Man in the Sudan.]—*Ent. Mo. Mag.* London. 1925. June. Vol. 61. pp. 132–133. [Summarized in *Rev. Applied Entom.* 1925. Aug. Vol. 13. Ser. B. Pt. 8. p. 129.]

v. Friederichs (K.). Beobachtungen an Simuliiden in Ost-Java. **Observations on Simuliidae in East Java.**]—*Beihefte z. Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Vol. 29. No. 1. pp. 119–125. [2 refs.]

vi. Cavassa (Nicolas E.). Un caso de miasis cutánea. '**Case of Cutaneous Myiasis.**]—*Cronica Med.* Lima. 1925. Apr. Vol. 42. No. 742. pp. 102–103.

i. A corrective to Wertheimer's (above) rather naive paper.

ii. The "tick" here spoken of as having found its way—probably from the pubic hair—into human urine is not a tick, but a small mite of the genus Tarsonemus.

iii. Some familiar generalities on ticks and a list of 30 species found in the Congo.

iv. This thrips—a cotton pest in the Sudan—is recorded as biting man, the bite causing severe irritation followed by inflammation and—in one case—by slight "poisoning."

v. Three species of Simulium—*argyreatum*, *iridescens*, and one near *atratum*—in eastern Java and none is troublesome to man.

vi. Nothing noteworthy. A larva extracted is said to have had the characters of Gastrophilus.

A. A.

i. Wall (F.). **A Case of *Echis carinatus* (?) Poisoning. Failure of Calcium as a Therapeutic Agent. Death in 86½ Hours.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. pp. 470–471.

ii. Singh (S. A. S. Chuhar). **A Fatal Case of Snake-Bite** (? *Echis carinatus*) **during Pregnancy.**—*Ibid.* pp. 471–472.

iii. - - -. **A Fatal Case of Snake-Bite** (? *Echis carinatus*).—*Ibid.* pp. 477–478.

i. The snake was not seen in this case, but, apart from the significant symptoms, good reasons are given for the conclusion that it was an *Echis carinatus*.

The patient was a young sepoy, who did not say anything about having been bitten by a snake until about 4½ hours after the event; the bitten foot was then swollen and very painful, and the man felt faint. Treatment was instituted—tourniquet; and solid $KMnO_4$ rubbed into an incision—as if for a sudden bite, and 40 cc. of antivenom ? Kasauli given intravenâ. Symptoms of general haemolysis began about 9½ hours after the infliction of the bite and continued unabated—in spite of treatment with adrenalin, pituitrin, haemostatic serum of Parke Davis, and intramuscular injections of calcium lactate; besides strychnine, morphia, and rectal injections of saline—until death during the 87th hour.

ii. The snake in this case was said to be a *landai* (Baluchi name for Echis). The patient was a woman about 30 and about 5 months in pregnancy. She was seen about 11 hours after being bitten on the ankle; in the 76th hour she brought forth a dead foetus; and in the 92nd hour she died. Her symptoms were pain (local and general), swelling, multiple bleedings, weakness and drowsiness. The treatment is not described.

iii. Another case of a Baluchi woman bitten on the left ankle by a *landai*. She was seen 2 hours afterwards and then treated locally with $KMnO_4$ and a subcutaneous injection of calcium chloride. Haemorrhages began during the 5th hour and recurred almost to the last. Pain and swelling were marked features, the swelling involving the whole left leg and also the trunk, shoulder and head on the left side. Death occurred in the 74th hour. Treatment by adrenalin, calcium chloride, hypertonic injections, inhalations, and stimulants was of no avail.

A. A.

Bharadwaja (A. C.). **A Case of Cobra Bite successfully treated with Fitz-Simson's (*sic*) Polyvalent Anti-Venomous Serum.**—*Indian Med. Gaz.* 1925. Oct. Vol. 60. No. 10. p. 472. With 1 text fig.

The snake in this case was captured and is photographed in a truculent attitude alongside the object of its spite—a young Indian woman.

The bite was in the fold of skin between the thumb and index finger. Two ligatures were applied at the time, one at the wrist, the other at the elbow, but the patient did not receive further treatment until the 6th hour. She then showed symptoms of facial and lingual paralysis, and of collapse. The arm was much swollen [but the ligatures had not been loosed]. The usual ceremony of local treatment was carried out and a subcutaneous injection of strychnine and an intravenous injection of Fitz-Simon's serum given, and repeated 3 hours afterwards. At the 11th hour the patient was recovered and very lively.

A. A.

Graham (George). **Transient Glycosuria following Scorpion Sting.** [Memoranda.]—*Brit.Med. Jl.* 1925. Sept. 26. p. 566.

The text here hardly justifies the title. A man, said to have been healthy, was bitten on the leg, in Java, by a large "spider," and the result of the bite is said to have been a local swelling, which lasted for a week and was followed by oedema and a blotchy rash on the legs, a feeling of limpness, and a sudden susceptibility to the effects of mosquito-bite. Some [unstated] time afterwards, in Hongkong, sugar was found in his urine, and in Shanghai there was still sugar enough to determine a bad prognosis. When seen in England, nearly 16 weeks after being bitten, the man, though still weak, had normal sugar tolerance and no sugar in his urine.

A. A.

i. Caius (J. F.) & Stelichen (A.). **Notes on the Concentration of Anticobra Serum. II. Refractivity.**—*Indian Jl. Med. Res.* 1924. Apr. Vol. 11. No. 4. pp. 1163–1172. With 3 charts. [1 ref.]

ii. ——, Iyengar (K. R. K.) & Anderson (L. A. P.). **III. Separation of the Proteins.**—*Ibid.* July. Vol. 12. No. 1. pp. 153–156. [7 refs.]

i. The question here approached is whether a material entity is included in antivenene: the present observers find that under similar conditions of concentration and temperature normal horse-serum and anti-cobra horse-serum are indistinguishable in refractivity.

ii. This is a further explanation of the paradox dealt with in No. 1 of this series (this *Bulletin*, Vol. 21, p. 158). Experiments here described show that in a given volume of an antivenomous serum the active neutralizing power is proportional to the amount of free antivenene present; that in anticobra serum the antivenene is partly free, and partly associated with the serum globulin; and that this associated antivenene can be set free from its globulin by addition of water. The amount of antivenene that can thus be liberated is in direct proportion to the amount of water added; but it must be remembered that in a given volume of anticobra serum the addition of a large quantity of water, although it sets free more antivenene, simultaneously dilutes it.

A. A.

i. Kraus (R.). **Ueber die Bedeutung der Avidität der Antitoxine und deren Heilwert. Heilversuche mit Skorpionenserum 4. Mitteilung.**—*Muench. Med. Woch.* 1924. Mar. 14. Vol. 71. No. 11. pp. 329–330.

ii. ——. **Ueber die Avidität der Schlangensera. Weiterer Beitrag zur Bestimmung des kurativen Wertes der Sera. 5. Mitteilung.** *Ibid.* Mar. 21. Vol. 71. No. 12. pp. 362–363. [1 ref.]

iii. ——. **Studien ueber antitoxische Schlangen- und Antiskorpionensera.**—*Ztschr. f. Immunitätsf. u. Experim. Therap.* I. Teil. Orig. 1924. Sept. 18. Vol. 41. No. 2. pp. 170–189.

iv. Mazza (Salvador). **On the Action of the Poison of the Viper and the Cobra on the Caterpillar of** *Galleria mellonella*.—*Jl. Trop. Med. & Hyg.* 1924. May 15. Vol. 27. No. 10. pp. 109–110.

v. Lévy (Robert). **Sur le mécanisme de l'hémolyse par le venin de scorpion. Comparaison avec d'autres venins.**—*C. R. Acad. Sci.* 1924. Nov. 17. Vol. 179. No. 20. pp. 1093–1095. [3 refs.]

vi. Douglas (B.). **Action empêchante de l'adrénaline sur l'absorption du venin de cobra par la peau.**—*C. R. Soc. Biol.* 1924. Dec. 5. Vol. 91. No. 34. pp. 1223–1224. [2 refs.]

vii. Welker (William H.). **Fractionation of the Proteins of Rattlesnake Venom.**—*Jl. Lab. & Clin. Med.* 1925. Jan. Vol. 10. No. 4. pp. 298–302. [2 refs.]

viii. Weiss (Nacif). **Anaphylaxie par les venins des Serpents sud-américains.**—*C. R. Soc. Biol.* 1924. June 13. Vol. 91. No. 20. pp. 24–25.

These all may be classed as academic papers.

Nos. i to iii (Kraus) deal with such subtle matters as the property of certain snake-antivenoms to neutralize certain scorpion-venoms, both *in vitro* and *in vivo*; the "paraspecific" power of certain specific (i.e., monovalent) antivenoms to neutralize the venom of other species; and the variability in specific applications of polyvalent antivenoms. These and other such phenomena have led the author to distinguish between the still obscure neutralizing potentialities of antivenoms and their more obvious curative powers.

No. iv (Mazza) shows how the caterpillar of the bee-moth, which can stand enormous doses of bacterial toxins and is indifferent to abrin, is very susceptible to viper and cobra venom.

No. v (Lévy) recounts observations and records experiments that lead the author to countenance the view that the haemolytic action of animal venoms in general is not direct, but requires a complementary substance, lecithin; and that it is this combination of toxin and lecithin that produces haemolysis.

No. vi (Douglas) describes how the prior application of adrenalin to a superficially abraded skin slightly retards the effect of subsequent application of cobra venom to the abrasion.

No. vii (Welker) discusses and describes experiments indicating that the toxic principle of rattlesnake venom can be separated from the toxic fraction of the proteins of the venom.

No. viii (Weiss). Characteristic and markedly specific anaphylaxis obtained in the guineapig with the venom of 4 species of Lachesis.

A. A.

i. Brás de Sá (L. J.). **Clinical Notes on some Cases of Snake Bites treated by Antivenomous Serum.**—*Bol. Ger. Med. e Farmacia.* Bastora. 1924. July. 9th Ser. No. 7. pp. 306–308.

ii. Raimundo (João Manoel). **Contribution à l'étude des soidisant secrets des herboristes indigènes contre les morsures des serpents vénimeux.**—*Ibid.* pp. 303–305.

iii. Kobayashi (Chyokuro). [**Chlorcalcium Treatment of Adder Bite (Japanese Mamushi,** *Trigonocephalus blomhoffii*.)—*Osaka Igakkwai Zasshi* (*Jl. Osaka Med. Soc.*). 1925. Jan. Vol. 24. No. 1. [Summarized in *Japan Med. World.* 1925. July 15. Vol. 5. No. 7. p. 188.]

i. Records successful use of Kasauli antivenom in cases of bite by Russell's viper, *Echis carinatus*, and "unknown snakes."

ii. Numerous reputed cures for snake-bite have been tested. The remarkable statement is made that administration of 1·5 [? gm.] of ginger-rhizome in 5 cc. of water renders guineapigs tolerant of a lethal dose of cobra venom.

iii. States that an intravenous injection of 20 cc. of a 3 per cent. solution calcium chloride gave immediate relief from pain and quick recovery from toxic symptoms caused by the bite of *Lachesis blomhoffi*.

A. A.

i. Ribolla (Romolo). **L'ofidismo nei paesi tropicali.**—*Arch. Ital. Sci. Med. Colon.* Tripoli. 1923. May. Vol. 4. No. 5. pp. 135–155.

ii. Kraus (R.). **Ueber biologische Schlangenforschung.** *Med. Klin.* 1924. June 8. Vol. 20. No. 23. pp. 771–775. [1 ref.]

iii. do Amaral (Afranio). **On the Biological Differentiation of the Neotropical Species of Snakes, *Bothrops atrox* (Linné, 1758), *B. jararaca* (Wied, 1824) and *B. jararacussu* Lacerda, 1884.**—*Amer. Jl. Trop. Med.* 1924. Sept. Vol. 4. No. 5. pp. 447–452. [9 refs.]

iv. de Mello (Oswaldo). **Commentarios sobre 96 observações de accidentes Ophidicos.**—*Sciencia Medica.* 1925. Jan. 31. Vol. 3. No. 1. pp. 60–64. With 3 figs.

None of these papers contains anything that necessitates notice here. No. ii (Kraus) is an interesting survey of the whole subject of snake-venoms and antivenoms.

A. A.

Evans (H. Muir). **The Poison Gland of Trygon.—Supplementary Note.** *Proc. Roy. Soc.* Ser. B. 1924. Sept. 1. Vol. 96. No. B 679. pp. 491–493. With 2 text figs.

The author adds some descriptive detail and some rather sketchy figures of what he regards as a definite poison-gland in the groove of the caudal spine of sting-rays (Trygon). The species that furnished the material is mentioned only by its vernacular (Malay) name, *sengal pari*.

A. A.

Brazil (Vital) & Vellard (J.). Contribuição ao estudo do veneno das aranhas.—Immunização por via intradermica e por via subcutanea.—Soro anti-ctenus. Methodo de dosagem e primeira applicação no homem. **Study of Spider Venom.** *Brazil-Medico.* 1925. Oct. 17. Year 39. Vol. 2. No. 16. pp. 224–227.

—— & ——. Contribuição ao estudo do veneno das aranhas. Contribution à l'étude du venin des araignées. *Mem. Inst. de Butantan.* 1925. Vol. 2. No. 1. pp. 5–70. With 14 plates. French summary pp. 71–77. [89 refs.]

The authors have studied the action of the venom of the following Neotropical spiders: *Ctenus ferus* and *Ct. nigriventer*, *Trechona venosa*, *Nephila cruentata*, and *Lycosa raptoria*. The most satisfactory material for purposes of study is a saline solution of glands that have

been dried at 37° C. No haemolytic properties were observed in any of the specimen venoms. The venom of *Ctenus ferus* and *nigriventer* was purely and extremely neurotoxic; for a rabbit of 1 kilogm. the minimum lethal intravenous dose of the former was 0·4 mgm., and of the latter 0·3 mgm., the animal dying paralysed after violent convulsions. That of *Trechona venosa* was only a few degrees less neurotoxic; the m.l.d. (same standard) being 0·6 mgm. That of *Lycosa raptoria* caused nothing more than severe local inflammation, and that of *Nephila cruentata* had only a local and a feeble effect.

A. A.

Houssay (B. A.) & Mazzocco (P.). Mécanisme de l'action des venins de serpents et de scorpions sur le muscle strié. [**Mechanism of Action of Snake and Scorpion Venom on Striated Muscle.**]—*C. R. Soc. Biol.* 1925. Nov. 6. Vol. 93. No. 31. pp. 1120–1122.

A formal paper containing details of the reactions of batrachian muscle-nerve preparations to venom in various chemical media.

A. A.

Barg (W. J.). [**The Effect of the Venom of some Supposedly Poisonous Arthropods.**]—*Ann. Ent. Soc. Amer.* 1924. Vol. 17. No. 3. pp. 343–352. With 7 figs. [Summarized in *Experiment Station Rec.* 1925. Aug. Vol. 53. No. 2. p. 157.]

The summary merely states that this paper deals with experiments upon man and rats with the venom of centipedes and scorpions.

A. A.

Pallary (P.). Etudes sur les scorpions de la Berbérie. [**The Scorpions of Berbérie.**]—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 45–58. With 9 text figs. [32 refs.]

This is a systematic study, with plenty of clear line-drawings illustrating the characters used in the classification of scorpions and with a dichotomous table for the discrimination of genera and species.

A. A.

United States Naval Medical Bulletin. 1925. Sept.–Oct. Vol. 23. Nos. 3 & 4. pp. 316–320.—**Three Cases of Food Poisoning attributed to eating Freshly Caught Fish—Yellow Jacks.**

Not all the men who ate of the fish—a species of Caranx or horse-mackerel caught off the Virgin Islands in the month of February—suffered; but particular care was taken to exclude any source of food-poison, other than this particular species of fish, from the diagnosis in the case of those who did suffer after eating the fish.

Symptoms began, from 4 to 5 hours after eating, with constitutional disturbance—headache, dizziness, general soreness of muscles, or even cramps in the legs, also ptosis and derangement of visual accommodation; colic and diarrhoea and vomiting followed. Mild purgation appears to have relieved the symptoms, but the soreness of the muscles continued for several days, and in one case the cramps in the legs persisted for more than a week.

A. A.

Cawston (F. G.). **The Smaller South African Shells that harbour Cercariae.**—*Trans. Roy. Soc. S. Africa.* Vol. 12. Pt. 2. pp. 13–15.

In searching for the intermediary molluscan hosts of trematode worms the novice is apt to take for the innocent young of large-sized species those numerous minute mollusca that are adult forms of small-sized species and by no means innocent. The author draws attention to some of these small mollusca that he has found variously infected in his survey of rivers and pools in South Africa. He instances a small Planorbis (near *gibbonsi*) having a shell seldom more than 5 mm. diameter, that harbours an amphistome cercaria 2·45 mm. long, and another even smaller Planorbis species infested with a distome cercaria 0·7 mm. long; also another Planorbid (*Segmentina planodiscus*) common around Durban and having a shell not more than 6 mm. diameter, and harbouring cercariae including those of a schistosome. Finally, he mentions a river-limpet, *Burnupia trapezoidea*, contained in a shell only 6 mm. long, infested with monostome cercariae 0·5 mm. long.

A. A.

Bequaert (M.). Note sur les mollusques du Katanga. [**The Molluscs of Katanga.**]—*Bull. Méd. du Katanga.* 1925. Aug. Vol. 2. No. 4. pp. 165–166.

The author has found the following snails of medical and veterinary importance in Katanga: *Bullinus adamsoni* (intermediate host of *S. haematobium*), *Planorbis guettera* (intermediate host of *S. mansoni*), *Limnaea* spp. and *Melania* spp.

T. W. M. C.

Cawston (F. G.). **A Contribution to the Study of the Radulae of Fresh-Water Mollusca.**—*Jl. Trop. Med. & Hyg.* 1925. Oct. 15. Vol. 28. No. 20. pp. 365–366. With 1 text fig. [7 refs.]

The radula of Gastropod mollusca affords characters of importance in the classification of species, genera, and families, and the author here figures and describes the form and arrangement of its teeth in some of the fresh-water and lagoon molluscs of S. Africa, with regard to the identification of species that are intermediary hosts of trematodes.

A. A.

Bequaert (J.). **The Arthropod Enemies of Mollusks, with Description of a New Dipterous Parasite from Brazil.**—*Jl. Parasit.* 1925. June. Vol. 11. No. 4. pp. 201–211. With 1 text fig. [30 refs.]

This is an academic paper based on a description of a new type of a Sarcophagid fly that appears to be destructive to snails in Para (Brazil). In the introduction an account is given of the Arthropod enemies of Mollusks; these include mites, carnivorous beetles (aquatic and otherwise), sarcophagine, calliphorine and other muscid flies, and phorid flies.

A. A.

Delanoë (P.). De la rareté du surmulot à Mazagan. [**Rarity of Brown Rats in Mazagan Morocco .**] —*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 152–153. [1 ref.]

The author has already remarked upon the rarity of the brown rat at Mazagan; he now reports that of 1,106 rats caught there in the latter half of the year 1924 not one was a brown rat. The common rat of Mazagan is *M. alexandrinus*.

A. A.

Anderson (Ch.). Présence de *Bullinus contortus* dans l'oasis de Biskra (Algérie). —*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 267–268. [1 ref.]

Bächer (Stefan), Kraus (Rudolf) & Löwenstein (Ernst). Ueber Toxoide. III. Mitteilung. Zur Frage der aktiven Schutzimpfung gegen Schlangengift.—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1925. Oct. 31. Vol. 45. No. 1. pp. 93–96. With 1 plate.

Borel (E.). Contribution à l'étude des moustiques de l'Indochine.—*Arch. Insts. Pasteur d'Indochine.* 1925. Oct. No. 2. pp. 222–234. With 3 plates. [9 refs.]

Bruni (N.). Recherches sur quelques phytoparasites de nature protozoaire.— *Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 251–257. With 3 text figs. [14 refs.]

Catanei (A.). Anophèles de hautes régions de la Corse. Présence d'*A. bifurcatus* L. et d'*A. plumbeus* H. et S. dans l'île.—*Ibid.* Oct. 14. No. 8. , pp. 655–657. [1 ref.]

Evans (A. M.). Notes on Culicidae collected in Sierra Leone, with Descriptions of a New Species and a New Variety.—*Ann. Trop. Med. & Parasit.* 1925. Mar. 31. Vol. 19. No. 1. pp. 119–126. With 1 plate. [2 refs.]

——. A New Variety of *Anopheles marshalli*, from Sierra Leone.—*Ibid.* Dec. 16. No. 4. pp. 461–464. With 1 plate.

Ferris (G. F.). Fourth Report upon Diptera Pupipara from the Philippine Islands.—*Philippine Jl. Sci.* 1925. Nov. Vol. 28. No. 3. pp. 329–341. With 5 text figs.

Kofoid (Charles A.) & Swezy (Olive). Karyamoebina substituted for Karyamoeba, with a Note on its Occurrence in Man.— *Univ. California Public Zool.* 1925. Apr. 10. Vol. 26. No. 22. pp. 435–436. [2 refs.]

Martini (E.). Zur Kulizidenfauna Südostrusslands.—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Oct. 15. Vol. 29. No. 10. pp. 514–518.

Popov (P.). On the Discovery of *Phlebotomus caucasicus* Marzinovsky 1917 in the Turkestan, Afghanistan and Bukhara and the Difference between it and *Phlebotomus sergenti*, Parrot 1917.—*Rev. Microbiol. & Epidémiol.* 1925. Vol. 4. No. 2. English summary pp. 117–118. With 4 figs. on 1 plate. [In Russian pp. 88–96.]

Senevet (G.). Description des nymphes de *Rhipicephalus bursa* et de *Hyalomma lusitanicum* avec un tableau pour la détermination des nymphes des ixodidés algériens.—*Arch. Inst. Pasteur d'Algérie.* 1925. Mar. Vol. 3. No. 1. pp. 59–63. With 3 text figs.

TUBERCULOSIS IN THE TROPICS.

ALLAN (Peter). **Report of Tuberculosis Survey of the Union of South Africa.**—38 pp. With 6 charts. [U.G. 18–24.] 1924. Cape Town: Cape Times, Ltd., Govt. Printers. [Price 2s. 6d.]

Dr. Allan, who had been appointed a Medical Inspector in the Department of Public Health of the Union of South Africa in 1920, was selected, owing to his previous experience of tuberculosis, to carry out a general survey of the Union in relation to the distribution of this disease, and the Report now under consideration is the result. To quote from the "Minute Transmitting" which introduces the Report," In contrast with the 'question and answer' method followed by the Tuberculosis Commission of 1912–14, it was arranged that he should personally visit the principal urban centres and the large native areas of the Union, obtain all available information *in loco*, personally verify as far as possible all data and particulars, and make such further investigations and enquiries as were practicable under the circumstances." This programme was an extensive one, and we think that Dr. Allan is to be congratulated upon his success in dealing with a very difficult problem. The following figures will give some idea of the populations dealt with:—

Population and its Composition, as at 1921 *census.*

	Male.	Female.	Total.
White	782,035	737,453	1,519,488
Native (mainly Bantu) ...	2,382,397	2,315,416	4,697,813
Asiatic	97,336	68,395	165,731
Mixed and other coloured ...	275,224	270,324	545,548
Total	3,536,992	3,391,588	6,928,580

Density of Population per square mile as at 1921 *census.*

	Cape.	Natal.	Trans-vaal.	O.F.S.	Union.
White	2·36	3·90	4·92	3·76	3·22
Coloured and Native ...	7·69	36·56	13·98	8·72	11·42
Total	10·05	40·46	18·90	12·48	14·64

Within these general figures there are, of course, very wide variations of density of population. Johannesburg, for instance, having a density for all races of 1,587·85 per square mile, while Gordonia has a density of but 0·73 for the same space; and this factor of density of population has an important bearing on tuberculosis.

Dr. Allan had much difficulty in obtaining reliable statistics, and the figures upon which his Report is based leave much to be desired. In the great cities of the Union, of course, satisfactory records are kept, but in really interesting parts, such as the Transkei, the material for analysis is almost nil, and the investigator is obliged to have recourse

to the records of local practitioners and hospitals. There is a short note on "Previous Information regarding Tuberculosis" on p. 3 in which the following interesting passage from Theal's "History and Ethnography of South Africa" is quoted :—

"He (the European) might recover perfect health in this dry climate, while they (the Hottentots) might perish, *as so many of them have done from that disease*, it being new to them."

It is worthy of note that tuberculosis was then widespread amongst the Hottentots and "*was new to them*," a fact the significance of which did not escape the author. MOODIE is quoted as stating, in 1830, that tuberculosis was uncommon among the Dutch and English settlers but "was frequent among the Hottentots." Allan, discussing the conditions of life in South Africa, says that "many different standards of living are found, from that of the European, equal to the best standard in European countries, through various grades to the 'poor whites' whose standard of living is very low; there are also various grades among the mixed coloured and also among the natives, from the educated native to the 'Red' Kaffir in his kraal." In Cape Town, reliable statistics have been kept since 1902, and from this source Allan has compiled his Graph I which is here reproduced.

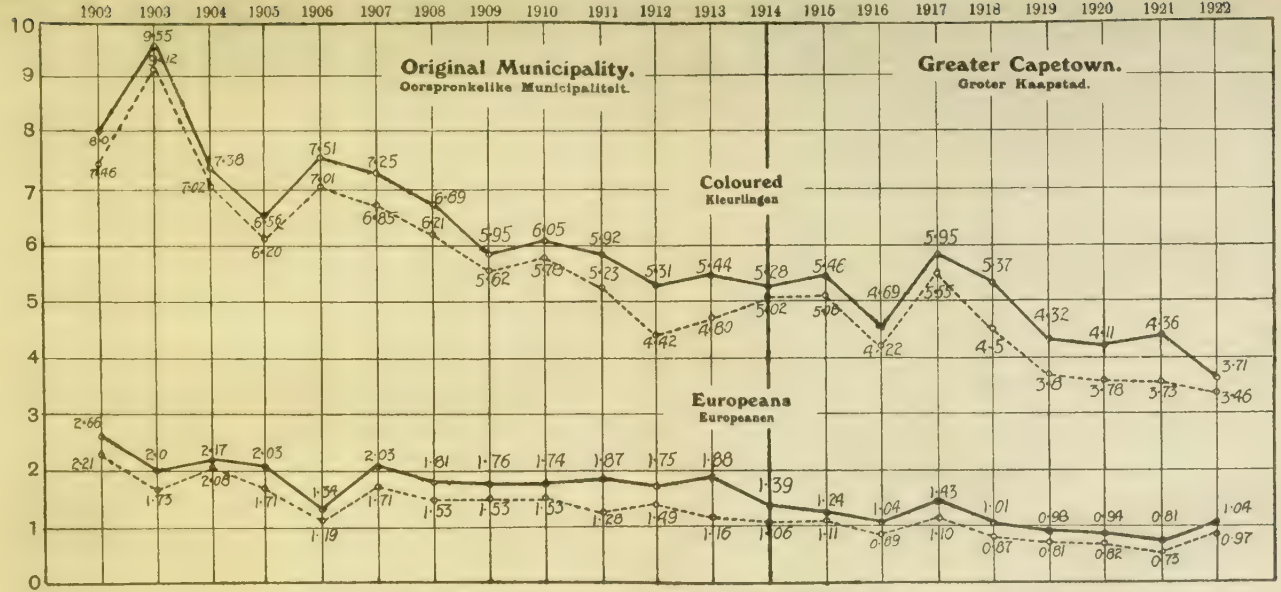
This Graph, while giving an idea of the very heavy death rate amongst the coloured population as compared with the whites, shows that a wonderful change for the better has taken place within the last twenty years, an improvement comparable, for the coloured population, with that which has occurred in England and Wales since 1851, and very probably due to similar causes. It is of interest to hear that in the "mixed coloured" community the disease, though more prevalent than amongst the Europeans, still follows much the same course. To quote the author, "the mixed coloured population of Cape Town has developed a considerable degree of immunity to tuberculosis." In the midland and eastern districts of the Cape Province the death rates from all causes and from tuberculosis are high in all the locations. From a table on page 9, the following figures, referring, doubtless, to native populations, are abstracted :—

	Names of Locations.				
	Kabah.	Oat-lands.	Doorn-hoek.	Basuto.	Gubbs.
Death rate per 1,000 living	48·33	76·36	95	45	74
Death rate from Tuber-culosis	6·11	21·81	12·5	7·5	8

These death rates, especially that for Oatlands, where the housing of the natives is very bad, are exceedingly high. From the point of view of "Tuberculosis in the Tropics," the highest interest centres, of course, upon the investigations in the Transkei, but these, for reasons beyond the control of Dr. Allan, are unsatisfactory and inconclusive. It is clear, from hospital records and reports by local doctors, that tuberculosis is very prevalent amongst the natives. "About 10 per cent. of the total patients admitted [at Umtata Hospital] are tubercular, and these are only the worst cases, as the hospital is not intended for tuberculosis." Case records taken out by the author from the case notes of Dr. DREWE showed that from 10

CITY OF CAPETOWN.

DEATH RATE PER 1,000 OF POPULATION FROM TUBERCULOSIS, 1902–22.



Crude Death Rate, ——. Corrected Death Rate, - - - -.

Persons dying within 6 months of their residence in Capetown are classed as Non-Residents. The number of such persons is deducted from the total Tuberculosis Deaths, and this gives the balance as the Corrected Death Rate.

to 14 per cent. were diagnosed as suffering from tuberculosis. Clinical details of a few cases examined by the author are given and afford evidence of the establishment of some resistance, inasmuch as the lesions were found to be relatively chronic in type.

Dr. Allan concludes that, while the disease is widespread and has latterly increased in frequency, the clinical type is less acute than formerly. "Under his natural conditions of life, there is evidence that the native has acquired a considerable degree of resistance to the disease." An interesting attempt to ascertain the after effects of industrial infection on the Rand consisted in the tracing of "boys" repatriated owing to tuberculosis. Dr. Allan succeeded in following up 112 such "boys," finding that 65, or 58·2 per cent., had died. Of the 47 survivors, 28 had recovered sufficiently to work, 10 had improved, but were not working, 8 were seriously ill, and in one no report was obtainable. That 25 per cent. of these infected natives should be "well and at work" is a remarkable and hopeful fact showing, as it does, that tuberculosis, in the primitive tribesmen, has a tendency to recover if the individual is placed under his natural surroundings—just as does the tuberculosis of children, even at the most susceptible age-periods, in this country. "In only 4 instances among the 112 repatriated 'boys' traced was there any occurrence of tuberculosis in relatives." This interesting note would be more valuable if the time elapsing since repatriation were recorded and, more especially, if tuberculin tests on the "contacts" had been possible. Writing of the tuberculosis in Natal, Dr. Allan quotes some interesting facts from the records of Dr. Wildish of Eshowe, who states that "about 10 years ago, he often saw as many as 5 cases of tuberculosis in natives in one day, whereas, in 1921, out of 3,000 natives seen, there were only 50 such cases . . . He thinks that the decline in incidence is due to better feeding and education, the natives being impressed with the infectious nature of the disease. He quoted instances where the total inhabitants of a kraal died of tuberculosis, infection being due to a careless consumptive."

Dr. Wildish also mentioned an interesting condition often seen in natives, "a skin tuberculosis, spread by wearing beads which have been worn by someone with tubercular sinuses," which Dr. Allan states to correspond to the skin conditions sometimes seen in butcher's and known as "butcher's warts." A table on page 21 sets out the death rates from tuberculosis amongst Indians in Natal from 1904 to 1921, and shows that a remarkable fall has taken place as from 1911 onwards.

Under the section dealing with "Tuberculosis among Natives in Industrial Employment," the following interesting figures are given: -

Year.	Tuberculosis.		Silicosis.		Tuberculosis with Silicosis.		Total Wastage from the Three Causes shown.	
	Repatriations.	Deaths.	Repatriations.	Deaths.	Repatriations.	Deaths.	Repatriations.	Deaths.
1916 ...	376	139	73	10	44	28	493	177
1917 ...	510	117	69	8	66	9	645	134
1918 ...	501	132	57	12	65	9	623	53
1919 ...	438	105	84	18	127	20	649	143
1920 ...	602	122	97	17	121	30	820	169

As the author remarks, the increase in repatriations from 1916 to 1920 is significant. An important note on "The Type of Tuberculosis seen Post-Mortem in Native Mine Labourers on the Witwatersrand" deserves quoting in full :—

"The type is most acute and generalized in East Coast boys, and most nearly approaches that of Europeans in the Cape Colony natives. In other words, the generalized or 'infantile' type occurs in natives from areas where contact with Europeans has dated from comparatively recent times, whereas natives from areas in which European influences have been longer at work suffer from a more chronic and localised type of tuberculosis. These latter natives have acquired a certain degree of immunity."

In the Résumé of Results of Survey on pages 28 to 30, Dr. Allan briefly sums up his findings and hazards a few conclusions. He gives four factors in influencing the "Index of Tuberculosis Mortality," which are as follows :—

"(*a*) Susceptibility of the different races and individuals to tuberculosis.
"(*b*) Chances of infection and degrees of infection.
"(*c*) Resistance of infected persons to the disease.
"(*d*) Economic conditions.

"All these factors," he continues, "are inter-dependent. The high susceptibility of certain races may be due to the fact that the disease is comparatively new to them so that they have had no chance of developing immunity." Further on he points out that "all the available information indicates that the disease is fairly wide-spread among the natives in the Transkei and Ciskei, and that its prevalence is slowly increasing. The native seems to be acquiring a certain amount of immunity to the disease."

The paragraph on the "Causes of Tuberculosis," and on the "Prevention and Treatment of Tuberculosis" are far less interesting than those dealing with the Survey itself and are on conventional and not very illuminating lines. Speaking of sanatorium treatment, Dr. Allan states that "A sanatorium . . . is simply a hospital on 'open-air' lines." It is time that this conception of a sanatorium disappeared, but there is, unhappily, reason to believe that a few sanatorium superintendents, even in this country, still adhere to it. There are some interesting but inadequate figures as to infection of cattle in South Africa and the tables and graphs are of value and merit the close study of all those working at tuberculosis.

S. L. Cummins.

Proceedings of the Transvaal Mine Medical Officers' Association. 1925. Mar. Vol. 4. No. 11. pp. 3, 4 & 8; June. Vol. 5. No. 2. pp. 1–6; July. Vol. 5. No. 3. pp. 3–8; Sept.–Oct. Vol. 5. No. 5. pp. 1–8. [**Tuberculosis amongst South African Natives employed in the Mines.**]

i. *Miners' Phthisis Act Consolidation Bill.*—In the March number of the Proceedings is recorded a "Resolution" passed by the Association as bearing upon proposed legislation, a clause having been suggested for inclusion in a Bill before Parliament that "natives" in the mines should be examined *stethoscopically* every three months. The resolution need not be reproduced in full, but it is worth while to quote one of its paragraphs as an example of how the benevolent schemes of laymen appear, sometimes, in the light of the practical experience of doctors :—

"A stethoscopic examination of every native every three months would entail approximately 800,000 examinations a year on the gold mines of

the Witwatersrand. A satisfactory stethoscopic examination should take about 10 minutes.

"On this basis, 134,000 hours a year would have to be devoted to these examinations, or, taking 300 working days a year, 448 hours a day, or the full time of 56 medical officers working 8 hours daily at stethoscoping natives only. The Executive would here point out that it is beyond the physical powers of any man to stethoscope continuously for more than two hours in any four hours."

ii. *Disposal of Tuberculosis Cases.*—In the March number, too, there is an important letter from Dr. L. Bostock, District Manager of the Witwatersrand Native Labour Association, Ltd., at Lourenço Marques, calling attention to the increasing number of repatriates returning to his territory in an advanced state of tuberculosis of the lungs after work in the mines and asking for earlier diagnosis and increased vigilance on the part of medical officers and others. This letter could not be discussed in the absence of Dr. Bostock, but the importance and the difficulty of the points raised were fully recognized.

iii. *Discussion on Tuberculosis.* [Young].—In the June number, a discussion on tuberculosis is recorded opened by Dr. Young, at the request of the Executive Committee, with an account of the methods adopted in the examination of new recruits before they arrive at the Mines.

For the year 1924, 211,747 natives came to the Mines from all sources. Of these, Dr. Young reports :—

66,755 were British South Africa recruits.
68,294 were British South Africa non-recruits.
21,191 were British South Africa locals.
55,496 were East Coasters (recruited, non-recruited and locals).

Out of this total, only 66,755, or the British South Africa recruits, were strictly examined before reaching the Mines. Summing up, Dr. Young says :—

"It is easy at the initial examination to discover natives with clinically definite tuberculosis, but it is very difficult to detect natives, apparently physically fit, with the disease in a latent state, and who are likely to develop tuberculosis after working a few months underground."

In this sentence, Dr. Young puts the matter in a nut-shell. Although much of the discussion centred upon the desirability of finding out which of the healthy men examined were the ones destined, later, to develop tuberculosis, it is certain that this is but a pious aspiration. All that the most careful medical examination can do is to detect the men already affected. Very few medical examiners are so successful as to accomplish even this in every case.

iv. *Discussion on Tuberculosis* (*continued*).—In the July "Proceedings," three important Resolutions were carried, which are worth quoting in full :—

"(*a*) That steps should be taken to control all natives suffering from early tuberculosis who have been rejected at the initial examination as unfit for mine work.

"(*b*) That all Contractors' natives working on the mine should be examined before employment, and be under the supervision of the Mine Medical Officer.

. . . . . .

"(*c*) That in view of the desirability of ridding the Witwatersrand Gold Mines of pulmonary tuberculosis, amongst European and native employés, and of the necessity of adopting every means by which the engagement of natives suffering from tuberculosis can be controlled, this Association

of Mine Medical Officers strongly recommends the establishment of a Central Bureau—adequately staffed and suitably equipped—for the strict clinical examination of all natives (including contractors' and voluntary natives) seeking mine employment.

"Further, that the necessary steps be taken for the satisfactory disposal of those natives rejected by such examination, in order that the risk of their presenting themselves subsequently for examination be guarded against."

v. *Discussion on Tuberculosis* (*continued*).—Two important communications appear in the September-October "Proceedings," the first a discussion on "the initial examination of recruits" opened by Dr. SKAIFE; the second, a note on "the detection of tuberculosis by weighing" opened by Dr. A. SMITH and Dr. L. E. HERTSLET.

(a) *Detection and Prevention of Tuberculosis during work period* [SKAIFE, W. G.].—In the opinion of Dr. SKAIFE, the important factors relating to tuberculosis in the initial examination of native recruits are as follows:—

(1) Tribe; (2) History of previous underground work; (3) Physique; (4) General condition; (5) Condition of lungs.

He considers that, of these, the factor of the "condition of the lungs" is far the most difficult to deal with. As he rightly says, "even with the aid of the X-rays and the stethoscope we must miss some cases."

The interesting point was brought out by Dr. FREW, in the discussion, that East Coast natives developed tuberculosis more rapidly than others, and there seemed to be general agreement on this. FREW added that, in these susceptible natives, "whether they examined them carefully or not, they might still develop tuberculosis." This truism, too often forgotten in the discussion, merely admits the impossibility of diagnosing tuberculosis before it starts. It is hard enough to do so when it has started! On this point, the objection was put to Dr. FREW that "he had not told them" (the members of the Association) "how to find out, amongst those East Coast boys, which of them were liable to develop tuberculosis." Dr. FREW's reply was: "I meant, I did not think anyone could pick out a boy, at the initial examination, who was likely to develop it." With this rejoinder most people with experience of African recruits will agree.

(b) *Detection of Tuberculosis by Weighing* [SMITH, A.; HERTSLET, L.E.]—Dr. A. SMITH gave a valuable summary of the methods of periodical weighing carried out, at the State Mines, under arrangements by the Miners' Phthisis Medical Bureau since 1921. The weighing is carried out at the hospital once every 30 days, or when the native receives his pay at the completion of a ticket. The system, as well as the action taken as the result of loss of weight, etc., is so sound that it deserves quotation in full, as it is possible that readers of this *Bulletin* may be in a position to use it in connexion with native labour elsewhere:—

"*Initial Weight.*

"At State mines, after each native has been medically examined and passed as fit, he is issued at the hospital with a weight card, on which all his particulars—such as name, tribe, number, etc., along with his initial weight (stripped)—are filled in, and all cards are filed in a cabinet, which is kept at the hospital and is in charge of an educated native clerk, who has to keep all cards in numerical order.

"The total number of natives, who have been passed for each month for underground work is put in the initial examination form, which is

signed by the Medical Officer and kept for counter-signature by a Bureau representative.

" *Periodical Weighings.*

" The periodical weighings of the natives are done on pay days and no native can receive his pay unless he holds his weight card.

" The weighing is done at the compounds. On Mondays at the North Compound, and Tuesdays and Wednesdays at the South Compound (the larger of the two compounds). There are over 10,000 native employés on the mine.

" The weighing is done, in over 90 per cent. of the complement, after a shift and before a meal. All natives, except a few staff boys, are weighed naked. The weighing is done on a Salter's Albion weighing scale.

" *Lost Weights.*

" The following natives are kept aside for medical examination on same days as weighing takes place :—

" i. All natives who show a loss of 6 lbs. or more in one month.

" ii. All natives who show a gradual loss of weight over four to six months of 8 lbs. or more.

" iii. Natives who show definite signs of any skin trouble such as syphilis, etc. Natives at North Compound are examined there, but South Compound lost weights are sent round to the hospital.

" The percentage of natives who come up for examination is not large, and comes to about ·57 per cent.

" All lost weights are carefully stethoscoped and medical history, if any, noted ; they are also questioned as to whether they had been feeling seedy lately, etc.

" *Examination Result.*

" i. Cases who show definite signs of tuberculosis of lungs are detained in hospital for repatriation, and also natives who are ill.

" ii. Cases of tuberculous glands of neck are transferred to surface work only, and come up each month.

" iii. Cases who show a big loss in weight but no physical signs are put up for re-examination next month.

" iv. Any cases who show marked crepitations, or whose lungs are not satisfactory, are put on to surface work for a month, and then are re-weighed and re-examined.

" v. Cases who show a persistent gradual loss of weight over a series of months are kept in hospital for observation, sputum examination and general tonic treatment.

" *Record of Lost Weights.*

" The lost weights are recorded on the periodical form and this is signed by the Medical Officer and countersigned by the Bureau representative on his periodical visits ; also all weights cards of lost weights are dated and stamped and initialed by the Medical Officer.

" *Causes of Loss in Weight.*

" Causes of loss in weight are difficult to state. A certain small percentage is due to tuberculosis. Amongst my lost weights on State Mines this came to, in 1924, 2·12 per cent. of all lost weights, and this year, up to 30th September, we have had 514 cases of lost weights and 13 cases of tuberculosis, all forms, or 2·52 per cent."

It is clear, from a perusal of the Proceedings of the Transvaal Mines Medical Association, that the importance of tuberculosis amongst native mine labourers is fully realized, and that every effort is being made to devise standard methods of selection and rejection of recruits as well as the disposal of the labourers developing the disease during the period of employment.

S. L. C.

[H. F.] L'infection tuberculeuse chez les Juifs du Sahara. [**Tuberculosis amongst the Saharan Jews.** —*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 472–473.

Desangles (P.). Enquête sur l'infection tuberculeuse chez les Juifs du Mzab par l'épreuve des cuti-réactions.—*Ibid.* pp. 474–477. [1 ref.]

Brouard (M.) & Leblanc (L.). L'infection tuberculeuse chez les Israélites de Beni Ounif et de Figuig (Sahara Oranais). —*Ibid.* pp. 478–484. With 1 text fig. [1 ref.]

Céard (L.). Enquête sur l'infection tuberculeuse chez les indigènes Musulmans et Israélites de la région de Colomb-Bechar (Sahara Oranais).—*Ibid.* pp. 485–493. [2 refs.]

Desangles gives a brief description of the Jewish population of the Mzab, consisting of about 1,500 persons almost entirely localized in the town in Ghardaia. Amongst these people, tuberculosis is common, of but slight severity and seldom leads to death except in advanced age. The Jewish population, in contrast to the Jews of European communities, lives in a state of deplorably bad hygiene, and the quarter which they occupy compares unfavourably with the rest of the town. Unlike the Mozabites, the Jews remain in their quarter all the year round, never quitting it to journey into the Oasis, and the Jews, too, smoke and drink to excess, the favourite beverages being anisette and " Bouka," an alcoholic liquor distilled from dates. And yet they appear much more resistant to tuberculosis than the Mozabites.

Tuberculin tests, carried out on the Jewish inhabitants of Ghardaia were as follows :—

In 443 children, 215, or 49 per cent., positive.
In 189 adults, 155, or 82 per cent., positive.

This relatively high tuberculin index accords with the chronic and benign type of tuberculosis noted.

Brouard and Leblanc find, amongst the Jews of Beni Ounif and Figuig, a very much lower proportion of positive reactions. Of 174 children, 11, or 6 per cent., were positive, and of 156 adults, 76, or 46 per cent. In these communities, as opposed to the Jewish population of Ghardaia above described, there is, as yet, but little tuberculosis, and but few opportunities for the spread of infection ; nor is there any evidence that the Jews are more resistant to the disease than their Mohammedan neighbours. The authors lay stress on the bad hygiene and the addiction to alcohol manifested by these people and give an interesting account, with a diagram, of the making of " ma haïa," an alcoholic drink distilled from dates.

L. Céard gives particulars of the cuti-reactions, not only of a colony of Jews at Colomb-Bechar, but also of the Musulman inhabitants. Amongst the latter, the inhabitants of the Ksar of Colomb-Bechar have an index of 36 per cent., those of the village an index of 49 per cent. The Jews, a community of recent arrival hailing from the Tafilalet, whence they came at the time of the French occupation, and amounting to about 800 persons, have a tuberculin index of 31 per cent. only, constituted of 14 per cent. amongst children and 48 per cent. amongst adults. This relatively low index is explicable in their great tendency to intermarriage within their own race, their recent arrival and relatively short period of contact (about twenty

years) with Europeans. On the whole, the findings of the authors of the above investigations into the distribution of tuberculosis amongst the Jews of North Africa lend definite support to the contention of A. Calmette that the relatively low incidence of tuberculosis amongst the Jews of Europe is the result of town-dwelling and exposure to frequent small immunizing infections by the tubercle bacillus rather than to a racial resistance. Where the manner of life and the environment are different, the Jew assimilates to other races.

S. L. C.

Guéguen (R.). L'infection tuberculeuse chez les indigènes musulmans du Gourara (Sahara Oranais). [**Tuberculous Infection in Moslems of Gourara.**]—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 468–471. [1 ref.]

For the mixed population, Berbers and Arabs, of the Annexe of Timimoun, a preliminary survey of the distribution of tuberculous infection by means of the cuti-reaction shows that of 466 children, from 1 to 15 years of age, a total of 87, or 18·6 per cent., were positive, while of adults, 9 out of 18 tested gave a positive reaction. The author adds that tuberculosis is not particularly prevalent or severe at Gourara.

S. L. C.

Bradfield (E. W. C.). **Abdominal Tuberculosis in Indian Practice.**—*Indian Med. Gaz.* 1925. June. Vol. 60. No. 6. pp. 249–252. With 4 text figs. & 1 coloured plate. [1 ref.]

——. **Tuberculous Abdomen.** *Trans. S. Indian Branch Brit. Med. Assoc.* 1925. Vol. 17. No. 3. pp. 156–161.

While this is mainly a paper for surgeons, Colonel Bradfield brings out some interesting points bearing upon the tuberculosis of natives of Southern India. While bovine infection is unknown in the Madras Presidency, tuberculous lesions of the bones and joints appear to be common and are stated to "pursue a much more intractable course and appear to be less amenable to non-operative forms of treatment" than in Europeans hospitals. "Multiple lesions appear to be more common and the surgical forms more frequently complicated by the presence of lesions in the lungs." Out of all the patients admitted to the Madras General Hospital in 1924, 205, or no less than 21 per cent., were suffering from surgical tuberculosis.

"The sites of the disease were as follows :—

Abdomen	95
Lymphatic glands	39
Bones	35
Joints	28
Abscess (not classified)	3
Skin	2
Testis	1
Kidney	1
Larynx	1
Total	205

The preponderance of abdominal lesions over lesions of bones, joints and glands is remarkable and offers a sharp contrast to the distribution of non-pulmonary tuberculous lesions in Western Europe.

This point is of interest and importance. CUMMINS, in his article on tuberculosis in the Official History of the War, Medical Services, Pathology Volume, gives, on page 473, a table of sites of tuberculous lesions in the various races serving in France, where it is seen that abdominal lesions were far more common in Indian troops and in the Indian Native Labour Corps than in any other racial formation. CUMMINS was inclined to attribute this to the fact that the Indian troops consumed milk to a much greater extent than others, and were thus more liable to abdominal infection, but this suggestion may have to be revised in view of the apparently marked liability of Indians to an abdominal type even where bovine infection can be excluded.

S. L. C.

GANGULI (P.). **A Few Hints on the Diagnosis, Prognosis and Treatment of Pulmonary Tuberculosis.**—*Indian Med. Rec.* 1925. July & Aug. Vol. 45. Nos. 7 & 8. pp. 233–237; 254–257.

This paper hardly concerns the tuberculosis of the tropics. It is just a summary of diagnostic methods, with special reference to tuberculin tests, and a few remarks as to prognosis and differential diagnosis. It is under the last heading that what there is of "tropical" interest comes into the picture. The medical officer new to Africa or to the East should never forget that the wasting, sweating and pyrexia pointing so surely to tuberculosis in European countries is, here, more likely to be the result of chronic malaria or kala azar.

Captain Ganguli's list of contra-indications to the subcutaneous tuberculin test should be laid to heart; more especially in relation to the progressive and exudative types of tuberculosis met with in the natives of tropical countries.

The opening paragraphs of Part I are of a more definite bearing on Indian tuberculosis than the general treatment of the subject in the rest of the paper. Ganguli says that "in Bengal, the conditions are such that this disease is on the increase and eating up the vitality of the nation." As a set-off to the views of Dr. Girindra Nath MUKHERJI, quoted below (p. 316), we learn from Dr. Ganguli that it is not the weak and ill-nourished that are the chief victims of tuberculosis. "It is a disease," he says, "which principally affects the prime of our manhood."

S. L. C.

SENGUPTA (Nalini Ranjan). **The Problem of Tuberculosis.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 197–200.

"What," asks Dr. Sengupta, "is tuberculosis?" To this question he provides the following answer:—

"Tuberculosis is a disease due to faulty endocrine functionation characterised amongst others by fever, anaemia, loss of weight and excessive loss of calcium from the system. The advent of the tubercle bacilli into the system and of other bacteria early or late in the course of the process, and their location, determines the nature and subsequent course of the disease."

Later he states that:—

"Tuberculosis is pre-eminently one of these conditions where a doctor has to find out what starts the series of disturbances of which the

invasion of the lung or intestine with T.B. is only an important consequence."

It is a good thing that Indian doctors should tackle the problem of tuberculosis for themselves and original thinking deserves encouragment but it is just as well to guide the course of original thought by practical experiment. Speculations such as the above are calculated to lead to the kind of progress which usually ensues when the cart is placed before the horse.

S. L. C.

MUKHERJI (Girindra Nath). **Tuberculosis in Bengal.** *Indian Med. Rec.* 1925. Sept. Vol. 45. No. 9. pp. 273–276.

Dr. Mukherji takes the view that "mere exposure to infection is not by itself dangerous if the general health of the individual is good and its [*sic*] resisting power normal." To those who have seen young African and Indian soldiers, men in the splendour of physical health, and living under the excellent hygienic conditions of army life, pass, in a few months, from their full vigour to the last tragic feebleness of acute phthisis, and who have been able to contrast this fatal susceptibility with the high specific resistance shown by the C3 population of the great industrial centres in England and Wales, Dr. Mukherji's doctrine will seem a highly dangerous one, at least for India, where so many susceptible persons are concerned.

While many of the opinions of the author about tuberculosis require revision in the light of modern knowledge, his account of the mode of life in his own country and the many risks involved, for his people, in the transition from a primitive culture to an industrial life on "Western" lines is both true and disquieting.

It would be interesting, however, to know his authority for the statement "Animals (cows) killed for the market are often tubercular." If this is now true for India, the facts ought to be set forth in detail.

S. L. C.

ROY (Ashutosh). **Some Etiological Factors of Tuberculosis in India in General and Bengal in Particular.** *Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 229–233.

This paper, while consisting largely of quotations from Professor Ray LANKESTER, the Editor of the *Indian Medical Gazette*, and Doctor MUTHU, has an interesting and tragic character, so intense is the feeling of anxiety disclosed in it, as to the urgency of the tuberculosis problem in India and the bearing upon it of the special habits and customs of Indian races under the stress of new ideas, requirements and occupations imported from outside. Of especial importance are the "joint family system" of the Hindus, "early marriage, sexual excess, too many pregnancies, crowding together, and prolonged lactation."

The sexual life of the student community comes in for castigation and is thought, by the author, to play an important part in the spread of the disease amongst adolescents. Truly the price paid for a callow imitation of Western civilization is out of proportion to the value of the purchase. This paper makes sad reading.

S. L. C.

Chatterjee (Rai Bahadur Gopal Chandra). **Longevity of People who have been at One Time of their Lives declared Tuberculosis Cases.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 202–204.

This paper is of considerable interest because it shows that in India, as in European countries, there are resistant cases, capable of prolonged life in defiance of infection by the tubercle bacillus. Dr. Chatterjee quotes 8 cases from his own experience of patients continuing in good health for years after an attack of tuberculous disease. While noting these cases and laying stress on what he calls the "bright side of the picture," Dr. Chatterjee is under no illusions as to the specificity of the tubercle bacillus and its danger for susceptible persons. Talking of the would-be tuberculosis specialists who regard invasion by Koch's bacillus as no more than a "serious consequence" of a pre-existing state of faulty nutrition, he admits the futility of arguing with them. "They do not," he says, "seem to take into cognizance the fact of families in best of circumstances living on purest air possible being decimated by tuberculosis." These words of wisdom are worthy of consideration by many tuberculosis specialists outside of India.

S. L. C.

Korns (John H.). **Incidence of Tuberculous Infection in China.**—*China Med. Jl.* 1925. Jan. Vol. 39. No. 1. pp. 10–19. With 2 folding tables.

This paper constitutes a real contribution to our knowledge about tuberculosis in China, a field of information as yet almost unexplored and promising a rich harvest to the investigator. The most important communication known to us on this subject is that of Scott (see this *Bulletin*, Vol. 18, pp. 376–379) in which an analysis is given of 300 consecutive post-mortems on children dying of tuberculosis in Hong Kong. But, while of intense interest to the student, Scott's report has only a relatively slight bearing on what Sergent calls "prémunition" as a factor in the tuberculosis of China, since it deals with the post-mortem findings in an age-group too young to be anything but extremely susceptible, whether in China or in Europe.

In the Official History of the War (Medical Series, Pathology, p. 480) a table setting forth the annual incidence and mortality from tuberculosis per 10,000 of strength in some racial types of the British Expeditionary Force in France and Flanders shows that the Chinese Labour Corps approximated to the Portuguese troops rather than to East Indians or Africans in respect of liability to tuberculosis, a result which might, perhaps, have been expected in units raised in a country where the disease is known to have existed for centuries. In contrast to the statistical record, however, the reviewer's recollection of such cases of Chinese tuberculosis as came to his notice in France is that they were of great severity and of a "primitive" type and he recalls a series of post-mortem specimens from phthisical cases shown him by a young medical officer at one of the Chinese general hospitals close to Abbeville which conformed rather to the caseo-necrotic type characteristic of Africans and Orientals than to the fibrotic tuberculosis of Western races.

It was therefore with great interest that he turned to Dr. Korn's paper, hoping to find in his account of the incidence of tuberculous infection in China some fresh light upon the behaviour of Chinese

units when brought into contact with infection in Europe. The information supplied is of a kind which would be welcome from all Colonies and Dependencies of the British Empire, but which, alas, is seldom forthcoming. Dr. Korns tabulates the results of von Pirquet tests carried out on a series of 2,049 apparently healthy Chinese children, 1,070 boys and 979 girls, ranging from 8 to 20 years, and coming from 12 different institutions in or near Peking or Paotingfu. Table I deals in Section A with students in charitable Institutions coming chiefly from poor families in the famine areas, while children from the middle classes in mission and Government schools are dealt with in Section B. A rough division, on what the author notes as being a rather unsatisfactory basis, is made between children of urban and rural origin; and separate figures are given for the sexes.

The figures show that there is no appreciable difference between rural and urban children, that the male children tend to be more frequently infected than the female children, and that, on the whole, the distribution of infection in childhood is much less than in European countries. The most remarkable points, however, are that the incidence of infection is decidedly higher amongst the middle class children than amongst those from the poorer classes; 37 per cent. in Section B as compared with 26 per cent. in Section A, although the groups are of comparable ages; and that, especially in Section A, there is little tendency to the usual "step-like" increase of positive reactions with increasing age.

The following rough table, extracted from Table I in the text, will serve to illustrate these latter points:—

Von Pirquet Positives per cent. by Age-groups in Chinese Children.

Ages	8	9	10	11	12	13	14	15	16	17	18	19	20
A. Children of poorer classes	0	24	26	26	33	30	30	25	22	19	22	24	33
B. Children of middle classes.	13	33	32	24	33	41	40	36	38	38	40	36	34

These results are difficult to interpret, especially without the local knowledge that might supply a clue. It may be said that they tend, as far as they go, to suggest that there is but little diffusion of infection amongst children in China, a conclusion which would harmonize rather with our recollection of the pathological findings in phthisical adults of Chinese units in France than with the statistics of morbidity and mortality in the Chinese units as given in the History of the War. But it is not possible to accept as typical of China in general the results of tuberculin tests applied only to children under the artificial conditions of institutional life; conditions which may, perhaps, result in "sheltering" from home infection or, on the other hand, lead to propagation of infection from child to child where an "open" but undiagnosed case happens to be present. It is not suggested that the latter accident has occurred; the figures, indeed, appear to negative such an idea; but the possibility must be taken into account in considering the significance of the results.

It is to be hoped that results from Chinese children and adults under home conditions may, some time, be forthcoming to amplify the very interesting records of Dr. Korns.

It is stated that the results of von Pirquet tests were read after 48 hours. In the reviewer's experience, to obtain a true reading, it

is advisable to note the reactions for at least four successive days after the tests, the maximum effect being visible, as a rule, on the third day, after which the results gradually fade away. This point is mentioned as it is just possible that a few "positives" may have been missed if the 48 hours reading was the only one recorded.

S. L. C.

CALLENDER (G. R.), SHEPARD (C. A.) & KIRKWOOD (R. C.). **Tuberculosis in Filipino Troops.**—*Milit. Surgeon.* 1925. May. Vol. 56. No. 5. pp. 579–605. With 3 charts in text. [5 refs.]

This paper sets forth the results of an investigation of the amount of pulmonary tuberculosis amongst Filipino troops serving with their units in comparison with the amount found by the application of the same criteria by the same observers to 1,000 white American soldiers. There is also an investigation by another worker into the Filipino troops at Camp Stotsenburg, but here there were not equal radiographic facilities, nor was it possible to make a comparison with American troops.

"POSITIVES" PER CENT. IN AMERICAN AND FILIPINO TROOPS BY AGES.

	19–	20–24	25–29	30–34	35–39	40+	Per cent. total positive.
American Troops (White)	10·0	8·9	6·8	1·8	6·2	5·5	7·3
Filipino Troops (Manila)...	10·3	16·4	15·4	20·0	23·9	25·1	17·7
Filipino (Camp Stotsenburg)	11·5	11·3	12·5	15·6	19·8	28·4	15·4

The results, so far as concern *the positives per cent.*, are abstracted in the above table for convenience of reference, but those requiring an accurate idea of the findings must consult the original. It will suffice here to note that whereas, in white American soldiers, the "positives" decrease with advancing age, the reverse is true of the Filipinos. The authors explain this difference as in part due to the fact that American units are more efficiently "weeded out," tuberculous individuals being early detected and discharged. It would seem, however, that the Filipinos, as a nation, have a very high incidence of tuberculosis, a long history of tuberculization, and the defects of hygiene which facilitate rapid distribution of infection. The result is said to be a very high infantile and childhood mortality, the survival of only those with a considerable measure of resistance and a tendency to a recrudescence of the disease in late middle age, due perhaps to the lowering effects of intercurrent tropical diseases and defects in personal hygiene. It would seem, then, that the peculiar characters of the age-distribution of tuberculosis in Filipino troops is to some extent the expression of conditions obtaining in civil life. The majority of the cases recorded as "positive" were noted as "inactive," and it is suggested that the Filipino soldier, under the advantages of good food and the amenities of military life, is able to resist tuberculous infection to a very marked extent and to show but little tendency to toxic phenomena. Post-mortem examinations on civilians bear out this suggestion of a high resistance, a marked tendency to fibrosis being observable in most adult cases.

This paper is of much interest and deserves close reading. It contains an attempt to apply mathematical criteria to enhance the value of the comparisons between the different groups examined; but, in the opinion of the reviewer, the real difficulty lies in the *clinical* findings, which must necessarily be subjected to large degrees of error. "Only those cases were called positive in which positive physical signs were found which were confirmed by the presence of characteristic shadows in the parenchyma of the lungs by stereoscopic roentgenogram." Those familiar with tuberculosis will realize how great may be the variations between the findings of different observers, or of the same observer at different times, when physical signs and radiograms alone are relied on. The authors agree to this for, discussing statistical variations, they say "It would appear that the undeterminable variation of examiner and technique, including accessory aids, such as X-ray, are responsible, and we let it rest with that statement." The work, however, has clearly been both thorough and competent, within the limits of the methods employed, and it would be a good thing if medical officers serving with native troops in some of the British Colonies and Dependencies would institute enquiries on somewhat similar lines. The absence of any reference to the numbers of cases found to be sputum-positive is to be regretted; and the omission to carry out tuberculin tests to illustrate the distribution of *infection* as compared with clinically manifest *disease* leaves another question unanswered. But those familiar with the difficulties of carrying through elaborate clinical investigations in the tropics will easily forgive these omissions and will accord every credit to the authors of a successful and interesting bit of work.

The more important conclusions are as follows :—

"Thirty per cent. of male Filipinos of military age show tuberculous disease in a degree which should cause their rejection as recruits.

"Filipino soldiers appear to be able to continue on duty even when a tuberculous process is active, provided the extent be not too great, and such processes heal while continuing on active duty.

"Approximately two and one-half times as many Filipino males of the ages 19 to 50 have relatively gross tuberculous lesions in the lungs as are found in American males of the same age group."

S. L. C.

Bhaduri (Baidyanath). **A Few Words about Ocular Tuberculosis in General and Phlyctenular Kerato-Conjunctivitis.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 215–217.

Bhaduri mentions the "appalling" death rate from tuberculosis in Bengal as a recent observation. He finds that, leaving out phlyctenular disease, ocular tuberculosis only amounts to about 1 per 1,000 of cases in his own experience. He takes the view that "primary infection of conjunctiva and cornea is very rare" and thinks that, so long as the epithelium is intact, tubercle bacilli cannot penetrate into the conjunctiva.

Experiments by the reviewer on the conjunctival infection of guineapigs disproves this contention (*vide Tubercle*, 1924, January) but, while tubercle bacilli can easily pass through the conjunctiva of healthy but susceptible animals, the practical bearing of this observation on man is still open to question, and it is of interest to note this opinion from a practical ophthalmologist. The work of Weekers

and Colmant is quoted, and the author clearly favours the view that phlyctenular conjunctivitis is, for the most part, a manifestation of tuberculosis.

S. L. C.

Gupta (A.). **A Brief Survey of the Tuberculosis of the Skin and the Tuberculides.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 204–215. [8 refs.]

This anything but brief survey is a decidedly useful one for the practising physician, and is just the sort of paper for a "Special Tuberculosis Number." There is little or nothing, however, in Dr. Gupta's article relating to the special features of tuberculosis as a disease of the tropics, and we merely call attention to it because it ought to be of real value to medical men requiring information about tuberculosis of the skin. The author makes one curious statement which requires, we think, to be revised. Speaking of tuberculosis of the eyelids he says: "The T.B. are carried to the eyelid from the naso-pharynx, *via* the nasal duct and the lachrymal sac." This attribution to the tubercle bacillus of a power to swim up against the current along a narrow duct with living walls is not very convincing. Why postulate these acrobatic powers for a non-motile organism when the blood-stream is there to carry it from place to place?

S. L. C.

Lampe (P. H. J.). Een eigenaardig geval van tuberculose. [**A Peculiar Case of Tuberculosis.**]—*Geneesk. Tijdschr. v. Nederl. Indië.* 1925. Vol. 65. No. 2. pp. 244–247. With 1 plate.

In Surinam tuberculosis usually bears the character of an acute infectious disease. This case report concerns a native woman in whom post-mortem the right lung was found not to be affected, but atelectatic and imbedded in thick masses of tuberculous granulation tissue, "like the kernel in a pulpy fruit."

W. J. Bais.

Pomaret. Etat actuel du traitement des tuberculoses par les chimiothérapies anti-lépreuses. [**Present State of Treatment of Tuberculosis by Chemotherapeutic Agents Effective in Leprosy.**]—*Progrès Méd.* 1925. Apr. 18. No. 16. pp. 567–570. [38 refs.]

As its title implies, this article is merely a résumé of recent work in the application to tuberculosis of the various derivatives of the gynocardates and morrhuates so successfully employed in leprosy. After a consideration of the numerous similarities between tuberculosis and leprosy, the author gives an excellent summary of the present position of the new anti-leprosy treatment as applied to tuberculosis and closes his paper with a valuable bibliography of the subject. The author himself has given a comprehensive trial to the following:—

(*a*) Gynocardates and morrhuates of soda in 10 per cent. solution.
(*b*) Ethyl-chaulmoogric ethers, both crude and distilled.
(*c*) Mixtures of ethyl-chaulmoogric and benzyl-chaulmoogric ethers.
(*d*) The total ethyl-morrhuic ethers.
(*e*) A preparation obtained by the simultaneous etherification of a mixture of equal part of chaulmoogric and morrhuic acids and the

solution of the ethylic ethers thus obtained in cod-liver oil containing 2 per cent. of cholesterin.

It is the last which he finds the most active in the treatment of tuberculosis and he promises a clinical account of the cases treated at a future date.

S. L. C.

Row (R.). **The Curative Value of Autolysed Tubercle Bacillary Culture Vaccine in Pulmonary Tuberculosis and Leprosy.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 191–196. With 1 text fig. & 16 charts. [7 refs.]

In a study of tubercle cultures grown on glycerinated brain-agar, and emulsified in saline, Row has satisfied himself that the emulsions contain a fat-splitting ferment and a feeble proteolytic enzyme. The result of the action of these ferments is the production of "a putty like mass of agglutinated tubercle bacilli most of which are found to be non-acid fast." The mass is further purified and defatted and finally yields "a body with a minimum of fatty and waxy constituents, but mostly made up of bacillary proteins." This is dried, weighed, powdered and "made up into a colloidal suspension of a definite strength in saline." Row gives from 0·01 to 0·02 mgm. per week subcutaneously in treatment. As with other tubercle-bacillary emulsions, these doses are found by Row to cause "a small oedematous thickening" which subsides in a few days. Doses over 0·025 mgm. may produce local swelling and pain of over two weeks' duration. We are able to endorse these findings from our own observations with a sample of his vaccine kindly supplied by Colonel Row; and we have also met with the rise of temperature of from 0·5° to 1·5° F. following inoculation. Details are given of 25 patients treated and the charts indicate a very striking fall in temperature following treatment. So far, with the cases treated in Wales, we have failed to obtain comparable results, and we have been obliged to reduce the dosage to 0·001 mgm. in most cases owing to reactions of rather too great severity; but it is not possible to argue from the allergic cases of Europe to the types of acute tuberculosis treated by Row in India, and the results of his more extended trials will be awaited with interest.

Experiments carried out by Dr. Schutze in collaboration with the author at the Lister Institute, London, failed to demonstrate any favourable action upon the tuberculosis of artificially infected guineapigs.]

S. L. C.

Rele (V. G.) & Gharpure (P. V.). **Some Observations on the Results obtained in the Treatment of Surgical Tuberculous Lesions by Various Agents.**—*Indian Med. Rec.* 1925. July. Vol. 45. No. 7. pp. 200–202.

The authors have tried aspiration and oxygen injection (12 cases), Row's "Autolysed Tubercle Vaccine" (8 cases), Morrhuate of sodium, Tuberculin ointment and Iodoform emulsion (number of patients not stated). The results recorded are favourable on the whole, but, in some cases, the authors appear not quite satisfied. Speaking of the effect of tuberculin ointment in cases of tuberculosis of bone, presumably complicated by sinus formation, they say that "in all cases

the immediate effect was that the discharge became more and the edges were cast off, and the colour of the skin around the ulcer improved. The effect on the patient's mind is the reverse as he sees the wound enlarge and the discharge increasing." This effect on the minds of the patients led to the treatment being discontinued before final conclusions could be formed of its utility.

S. L. C.

BABLET (J.). Premiers essais de vaccination antituberculeuse des nourrissons en Cochinchine et au Cambodge. [**First Attempts to Vaccinate Infants against Tuberculosis in Cochin China and Cambodia.**]—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 379–380.

Between December 1924 and March 1925 the author, with the help of a large number of his colleagues in Cochin China, has carried out 435 vaccinations of infants with the B.C.G. vaccine of CALMETTE; and steps have been taken to extend the movement and to increase the number of "vaccinated" children throughout the colony. All the children selected were under 10 days old and each received, on three occasions, at two-day intervals, a centigram of B.C.G. culture, given by the mouth. In view of the results of the experiments with chimpanzees and monkeys at Kindia, summarized below, there is good reason to hope that the future may demonstrate the success of this admirable experiment in the prevention of tuberculosis.

S. L. C.

WILBERT (J.). Expériences de vaccination des singes contre la tuberculose par le BCG. [**Vaccination Experiments against Tuberculosis in Monkeys by B.C.G.**]—*Ann. Inst. Pasteur.* 1925. Aug. Vol. 39. No. 8. pp. 641–651.

The experiments here recorded were carried out at the "Centre de recherches et d'élevage de singes" formed at Kindia (French Guinea) by the Pasteur Institute and M. Wilbert states that they were organized on a programme drawn up by CALMETTE. The intention was to ascertain whether a preliminary infection (*prémunition*) with the B.C.G. strain of tubercle bacilli, rendered avirulent by CALMETTE and GUÉRIN through prolonged culture on a bile medium, would serve as a protection against subsequent infection with virulent tubercle bacilli. In a few preliminary experiments on chimpanzees it was shown that it was possible to pre-immunize these animals against relatively enormous doses of virulent bacilli by means of B.C.G. But, as pointed out by M. Wilbert, these protections against massive infections were a kind of "acrobatic performance," and it remained to apply the preventive immunizations on a more extended scale. Two series of experiments were instituted, the first on 15 chimpanzees, and the second on 59 Pithecan monkeys.

Chimpanzees. Three animals of adult age were vaccinated, one by subcutaneous inoculation of 5 cgm. of B.C.G. and, later, by the swallowing of 25 cgm. of the same culture; the other two by the swallowing of 25 cgm. of cultures in 5 doses of 5 cgm. each over a 10-day period. All these animals were then placed in close contact (cohabitation) with chimpanzees infected with virulent strains and, in the case of two of them, were further inoculated subcutaneously

or "fed" with large doses of the virulent strains. At the same time, 5 animals were infected with the virulent strains, H.R. and B.V., while 7 "controls" were placed in contact with the "infected" animals, but were left unvaccinated and uninfected. A year later, all three "vaccinated" chimpanzees were alive and well, all the 5 "infected" animals had died months earlier from tuberculosis, while, of the unvaccinated and uninfected "controls," 4 had died tuberculous through contact-infection and 3 had died of Pasteurella disease too early to show signs of tuberculosis.

In the case of the Pithecan monkeys, the experiment was on similar lines, 19 animals being "vaccinated" with B.C.G., and later, infected with large doses of virulent bacilli, 20 given virulent infection, and 20 "controls" kept without either vaccination or infection, but left in contact with the virulently infected animals, as were also the vaccinated group. Here the results were equally striking. Of the vaccinated monkeys, 6 were alive and well a year later, while 11 had died of various parasitic maladies, *but without showing any trace of tuberculosis at post-mortem examination.* Of the 20 "infected" monkeys, 19 had died of tuberculosis and the 20th had died of intestinal obstruction 8 days after the infecting inoculation.

Nineteen of the "controls" had died of tuberculosis contracted through contact and the 20th had succumbed to Pasteurella disease 16 days after being taken into use. In other words, none of the vaccinated animals had died of tuberculosis, while all the others, except 2 removed by premature death, had succumbed to the disease.

The author concludes :—

(1) That inoculation by, and swallowing of, living B.C.G. culture up to 100 mgm. is absolutely harmless to chimpanzees and Pithecan monkeys.

(2) These animals can easily be "pre-immunized" to virulent tuberculosis by B.C.G. vaccine under the conditions of the experiment.

(3) The "pre-immunization" thus accomplished lasts over a year.

(4) And the immunity may be renewed by the ingestion of a further dose of B.C.G. repeated annually.

The experiments, as recorded, hardly justify the third conclusion, since it may have happened that the exposure to "contact infection" led to a further production of immunity in these "protected" animals ; but it cannot be denied that M. Wilbert's investigations hold out a splendid promise of success for the B.C.G. vaccine of Calmette and fully justify the efforts now being made in France and in her colonies to protect the infants of tuberculous parents by the same means.

S. L. C.

Curasson (G.). La tuberculose bovine à l'abattoir de Bamako. [**Bovine Tuberculosis at the Bamako Abattoir.**]—*Bull. Soc. Path. Exot.* 1925. Oct. 14. Vol. 18. No. 8. pp. 687–689.

Like previous communications on animal tuberculosis from the pen of M. Curasson, this little paper is, although brief, both interesting and valuable. The author, with his colleagues, Messieurs Dischamps and Mir, has happened upon no less than seven instances of tuberculosis in zebus slaughtered at the abattoir at Bamako during the months of March, April and June 1925. In 6 of the cases, the tracheobronchial glands were affected, the liver also containing lesions in one of them ;

while the 7th case was one of miliary tuberculosis. The nature of the lesions was proved by microscopic examination of the pus and the finding of acid-fast bacilli or, where bacilli could not be found, the inoculation of the caseous pus into a guineapig which died from tuberculosis within 6 weeks and from which the disease was transmitted to other animals and successfully cultivated.

Rabbits have been inoculated, but it is still too soon to decide whether the infections are due to the "human" or the "bovine" type of tubercle bacillus; but the morphology and cultural characters suggest that the strain examined is of the *typus bovinus*. These 7 cases were found in a total of 1,107 animals slaughtered and examined in the months in question. Curasson thinks it possible that, having in view the known rarity of tuberculosis from African cattle, he may have overlooked lesions in previous investigations or attributed them too readily to the various parasitic conditions which are so apt to simulate tuberculosis in African cattle. The zebus found infected had come from the regions to the south of the Sahel. Curasson has now started intradermic tuberculin tests, but, out of 56 animals so far examined, has found only one "positive" reactor.

S. L. C.

Heinemann (H.). Zur Diagnostik der Tuberkulose im tropischen Lande. I. Mitteilung. [**Diagnosis of Tuberculosis in the Tropics.**]—*Ztschr. f. Tuberkulose.* 1924. Vol. 40. No. 5. pp. 324–329. [2 refs.]

——. II. Mitteilung.—*Ibid.* 1925. Vol. 41. No. 5. pp. 321–325.

Heinemann emphasizes the difficulties which sometimes arise in the early diagnosis of tuberculosis in primitive peoples. Disease of the glands may be confused with yaws, there are many conditions almost indistinguishable from bony tuberculosis even by X-ray examination, while the irritative cough, pleural pain and irregular pyrexia of early phthisis are also common in the hepatitis of amoebic disease and in chronic malaria.

Valuable as is the cutaneous tuberculin test, it is not without its pitfalls even in tropical countries, while there is real danger in employing the intracutaneous and subcutaneous tuberculin tests in the susceptible individuals of "primitive tribes." In the hope of arriving at a diagnostic method free from risk, Heinemann has tried a "complement-deviation" test in which "Old Tuberculin" (Höchst) is used as the "antigen," but he points out that not all samples of old tuberculin will serve and advises the use of a sample which is active in a "dose" of 0·02 or 0·025. [It is not stated what form of activity is used as a criterion, but it is assumed that the power of binding complement in the presence of an active serum is implied.] This test, called by the author the "T.W. test," has been tried by him with the sera of 2,000 persons, most of whom had also been tested by means of the cutaneous tuberculin test. In 59 patients suffering from manifest tuberculosis, the results, as compared with the von Pirquet readings, were as follows:—

von Pirquet positive	...	38 or 64 per cent.,
"T.W." positive	...	24 or 41 per cent.

Out of these, 12, or 20 per cent., were positive to both tests, 9, or 15 per cent., negative to both, 26, or 44 per cent., were positive to the

von Pirquet and negative to the "T.W." test, while 12, or 20 per cent., were positive to the "T.W." and negative to the von Pirquet reaction.

It is of interest to note that, out of 24 cases of cirrhotic phthisis, the von Pirquet test was positive in 22 and the "T.W." in 6 only, while, on the other hand, the von Pirquet only gave 8 positives, as compared with 14 positives by the "T.W." method, in the exudative and mixed cases of pulmonary tuberculosis. That there are fallacies in the "T.W." test is evident from the fact that out of 712 cases suffering from various diseases other than tuberculosis, no less than 213, or 30 per cent., gave a positive "T.W." reaction. It was especially in malarial cases that this fallacy was noted, a positive "T.W." occurring in 162, or 55 per cent., of 291 malarial patients examined.

In his second paper, the author compares the results of the "T.W. test" and a complement-fixation test with Besredka's antigen. His findings were as follows :—

Type of case.	T.W.+	Besredka+
Active tuberculosis	41 per cent.	91 per cent.
No signs of tuberculosis. Pirquet+...	54 „ „	40 „ „
No signs of tuberculosis. Pirquet—...	30 „ „	15 „ „

From these findings it is evident that the "Besredka test" is calculated to be of considerable value in the detection of active tuberculosis in the tropics.

S. L. C.

Louste (A.), Louet (L.) & Darquier (J.). Tuberculose à forme hypertrophique de la joue simulant le bouton d'Orient. [**Hypertrophic Tuberculosis of the Cheek simulating Dermal Leishmaniasis.**] —*Bull. Soc. Française de Dermat. et de Syph.* 1924. Dec. No. 9. pp. 504–505.

The authors describe a case in which a swelling situated on the left cheek close to the nasal furrow in an Armenian aged 15 was regarded as, probably, a case of oriental sore until a histological examination revealed the true nature of the lesion, which proved to be cutaneous tuberculosis.

In the discussion which followed, Jeanselme pointed out that if it were possible to mistake a cutaneous tuberculide for leishmaniasis, an error of the inverse kind was still more frequent, and cited cases in which oriental sores had been regarded as tuberculous lesions until the diagnosis was settled by their spontaneous healing on return to Europe.

[It is curious that, although the authors make special mention of palpable lymphatics and an enlarged gland in the "drainage area" of the sore, there is no mention, during the discussion, of the rarity of adenitis in cutaneous leishmaniasis and its almost invariable occurrence in tuberculosis of the skin. This point alone should have sufficed to awaken suspicion as to the true nature of the case.]

S. L. C.

Ferreira (Clemente). Liga Paulista contra a Tuberculose. Exercicio de 1924. Relatorio apresentado a Assemblea geral na sessao annual ordinaria de 26 de Maio de 1925. [**S. Paulo League against Tuberculosis. Report of 1924.**]—64 pp. 1925. S. Paulo : Casa Alpla Ltd. Praça de Sé, 92–A.

While without special bearing upon the problems of tropical tuberculosis as generally understood, this Report, like others from the hand

of Dr. Clemente Ferreira, is full of interest for the student of preventive medicine and should be consulted in the original. It is to be noted that the author is, on the whole, disappointed with the results of treatment with sodium morrhuate ; not having, as yet, obtained the high proportion of successes recorded by BOELKE and others. He is now trying copper morrhuate and is, so far, inclined to hope for better results with this preparation.

Discussing the tuberculosis mortality of Sao Paulo in 1924, a total of 824, or 12·3 per 10,000 inhabitants, he points out that, according to Sir Robert PHILIP, who postulates 5 " open cases " for every death, or to EMERSON, who considers that each death corresponds to 7 open cases, there ought to be from 5,000 to 7,000 beds available for tuberculosis in the locality. In contrast to this, there is merely the dispensary, capable of dealing with 300 or 400 infected families, the sanatorium of St. José dos Campos with 60 beds, and a few more beds in the pavilion of Santa Casa. After giving a review of what is being done elsewhere, he formulates what he regards as the minimum provision for a tuberculosis service on efficient lines, including dispensaries, open air schools, sanitaria, hospitals and laboratories.

S. L. C.

REVIEWS AND NOTICES.

YORKE (Warrington) [M.D., Prof. of Parasit., Univ. of Liverpool & Liverpool School of Trop. Med.] & MAPLESTONE (P. A.) [M.D., D.S.O.] With a Foreword by STILES (C. W.) [Prof. of Zool., U.S. Pub. Health Service.] **The Nematode Parasites of Vertebrates.**—pp. x+536. With 307 text figs. 1926. London: J. & A. Churchill, 7, Great Marlborough Street. [Price 36s. net.]

The book proper opens with an introduction which, accepting the zoological status of the Nemathelminths as a Phylum and that of the Nematodes as a Class, deals under RAILLIET's eight superfamilies with the Eunematoda parasitic in vertebrates. The difficulties, in our present state of knowledge, of their discrimination are indicated, and the extent to which their whole super-specific classification inevitably remains a matter of personal opinion, and therefore of personal responsibility, is throughout made evident.

Of the superfamilies, the heterogenetic Rhabsiasoidea are alone defined on other than anatomical grounds. The reasons which have influenced the writers in making the divisions and subdivisions which they have adopted are clearly stated, thus enabling any reader with adequate knowledge to form his own opinion as to the stability of the conclusions reached. It is a method which invites the criticism which it will doubtless receive, but it is scientifically honest and does not hide behind the curtain of authority.

Since the species listed number about 2,000, and even the genera are about as numerous as the days of the year, the need for limiting descriptions to the latter is clear, if the subject is to be kept within the limits of one volume. The main body of the book is occupied with their consideration, aided by valuable keys, and accompanied by lists of the species which the writers assign to each genus.

A few explanatory notes follow, dealing with terms used; and here, and only here, will be found an indication that the typical strongyle bursa is in general possession of a definite number of rays. An index of generic names is next introduced, the kind of print used indicating their validity or otherwise, cross references by double entry leaving the reader in no doubt. There next comes an index of specific names, giving the author, date, type host, genus assigned and original if these are not identical, and the page in the earlier part of the volume on which they appear. The book ends with a list of 684 numbered references, the corresponding pertinent numbers being found at the end of each generic section.

It probably requires one with some knowledge of the character of the literature on the Nematodes to appreciate how immense has been the work involved, and how altogether unexpected it would be if there were no oversights. Such exist. They are not here noted, partly because such a list to be of real value should be complete and the examination hitherto made of the volume has no pretence to be so, partly because their emphasis must give an entirely wrong perspective of the manner in which the writers have accomplished the task which they have undertaken.

And this leads naturally to STILES's foreword. He and HASSALL are at present occupied in adding to their invaluable Index Catalogues one arranged under Hosts. STILES has read the proof sheets of the volume under review and has afforded much friendly criticism and many valuable suggestions. Study of the foreword shows that STILES too has benefited; that there has been mutual ungrudging service and aid, not always too evident in these matters, to the great advantage of helminthology.

STILES, "as a member of the passing generation," and may his generation be long in passing, emphasizes the present desire to use, for the practical benefit of mankind, knowledge already gained, the consideration that none

can give knowledge without first gaining it, and the increased efficiency which outlying workers, labouring under a radially increasing handicap in the matter of reference material, will gain from the appearance of the volume. He ends by a letter to "My dear unborn colleague," which concludes with these significant words: "This work by Yorke and Maplestone was written in order to save your time and to make you more efficient in your professional life. It has cost them many hours and days of patient labour. It has not been prepared in order to gain a reputation. It is a labour of love on their part in order to help you. See that you do for the generation which follows you, what Yorke and Maplestone have done for you."

Clayton Lane.

SHARP (C. G. Kay). [M.D., Chief Med. Officer, Education Dept., Province of Natal, Major, R.A.M.C. (T. A.).] With a Foreword by CHRISTOPHERSON (J. B.) [C.M.G., M.D., F.R.C.P., F.R.C.S.] **Schistosomiasis vel Bilharziasis.**—74 pp. With 1 map & 35 text figs. 1925. London: John Bale Sons & Danielsson, Ltd., 83–91, Great Titchfield Street, Oxford Street, W. 1. [Price 7s. 6d. net.]

This little volume will be of considerable interest not only to many medical practitioners in regions where Bilharziasis is endemic, but also to those educationalists who are concerned with the physical welfare of their pupils. The author's experience has been gained chiefly in the Education Department of Natal, but while serving during the War he had opportunities of visiting Mesopotamia and India, and the results of further observations are recorded in the work. The brief foreword by Dr. J. B. Christopherson emphasizes the value of mass treatment in schools and the unique opportunities which they afford for educational propaganda. The text is clearly and agreeably written and printed. It should be remarked that the title *Schistosomiasis vel Bilharziasis* is somewhat misleading, indicating a broader survey of the subjects than that actually carried out. Schistosomiasis of the Far East is practically ignored, although the Bibliography at the end of the volume refers to the more important original papers on the disease. The most disappointing feature of the book, however, are the illustrations. It is difficult to believe that anyone with the author's obvious laboratory experience could be satisfied with the illustrations of the ova on p. 4 or that anyone without such experience could learn anything from them.

R. T. Leiper.

SNOWMAN (J.). [M.D., M.R.C.P. Lond.] **Manual of Emergencies. Medical, Surgical and Obstetric. Their Pathology, Diagnosis and Treatment (Based upon Lenzmann's "Emergencies in Medical Practice").** Second Edition.—pp. viii+361. 1926. London: John Bale, Sons & Danielsson, Ltd., 83–91, Great Titchfield Street, Oxford Street, W. 1. [Price 10s. net.]

For the general practitioner a manual of handy size devoted to the precise diagnosis and practical detailed treatment of the emergencies met with in practice, should prove a useful addition to his armamentarium. The volume under review, however, is one of those compilations which attempt to be all-inclusive and end by including too much while omitting some essentials. What is gained by giving some account of the operation for exposure and repair of a wound of the heart while omitting a description of how to perform paracentesis of the tympanum? That diagnosis and treatment should rest upon sound pathology no one will dispute, but it is questionable whether, in such a volume as this, much is gained by many of the paragraphs devoted to this aspect of the subject. As an

example—only a reader already familiar with the more recent work in cardiology would be able to follow the gist of the author's rehash of this subject. Why drag in such phrases as "circus movement" and "anoci-association" unnecessarily, and why describe snake poisons under the fancy term "ophidiasis"? The methods of treatment actually advised are for the most part sound and up to date, but the book as a book has suffered by not having been more carefully prepared, and written from the point of view of the man who will read it, points which in a subsequent edition may easily be overcome and constitute the book a most valuable one.

H. S. Stannus.

WARD (Espine). [M.D. (Belfast), West African Med. Staff.] **Favourite Prescriptions including Dosage Tables and Hints for Treatment of Poisoning.**—96 pp. 1926. London: J. & A. Churchill, 7, Great Marlborough Street. [Price 5*s.* net.]

This little book, by an officer of the W.A.M.S., is divided into three parts—dosage tables, hints for treatment of poisoning and prescriptions. It is interleaved throughout. Perhaps it is not intended for practitioners in the tropics, for in the dosage tables one misses emetine, atoxyl, oleum chenopodii and carbon tetrachloride. The prescriptions are arranged under disease headings from Acne to Worms. The book can be slipped into the pocket, and no doubt will be found useful.

A. G. B.